Older Adults in Nursing Homes: Assessing Relationships Between Multiple Constructs of Social Integration, Facility Characteristics, and Health

BY

Skye N. Leedahl

Submitted to the graduate degree program in the School of Social Welfare

and the Graduate Faculty of the University of Kansas

in partial fulfillment of the requirements

for the degree of Doctor of Philosophy

_____

Rosemary K. Chapin, PhD, Chairperson

_____

Todd D. Little, PhD, Methodologist

_____

Terry Koenig, PhD

_____

Anne Williford, PhD

_____

David J. Ekerdt, PhD, Sociology

Date Defended: March 28, 2013

The Dissertation Committee for Skye N. Leedahl

certifies that this is the approved version of the following dissertation:

Older Adults in Nursing Homes: Assessing Relationships Between Multiple Constructs of Social Integration, Facility Characteristics, and Health

_____

Rosemary K. Chapin, PhD, Chairperson

Date approved: March 28, 2013

Abstract

An extensive body of research has examined connections between older adults' social worlds and health and well-being, particularly for community-dwelling older adults. Yet, little is known about the social worlds of older adults living in nursing homes because of this population's exclusion from many studies and national databases. Further, the influence of social workers and culture change practices on the social lives of nursing home residents is not well-documented. This research assessed the relationships between multiple social integration (i.e., social networks, social capital, social support, and social engagement) and health (i.e., depression, functional health and well-being) constructs, and examined the influence of facility characteristics (i.e., culture change, role of social workers) on these variables. This study drew on a model based on social network theory developed by Berkman, Glass, Brissette, and Seeman (2000). Data were collected at 30 nursing homes in Northeast Kansas using a cross-sectional, quantitative, planned missing data design with random sampling techniques. Data collection occurred at the individual-level through in-person structured interviews with older adult nursing home residents (N = 140) and at the facility-level (N = 30) with social service directors and nursing home administrators. Data were imputed using multiple imputation, and multilevel confirmatory factor analysis was used to verify measurement properties. Multilevel structural equation modeling (MSEM) was used to answer the research questions and test hypotheses. Findings revealed that the data did fit the proposed model supporting social network theory, showing that social networks and social group participation indirectly influence depression and functional health and well-being primarily via social engagement. Social capital had a direct influence on both health constructs. Further, the relationships sub-scale of culture change involvement significantly influenced between-level differences in residents' social networks, and

the number of social workers in a nursing home was positively associated with between-level differences in residents' social support. These findings inform social integration strategies for reducing social isolation and related declines in physical and mental health for older adults in nursing homes as well as nursing home and health care policies for improving quality of life of those utilizing long term care services.

Acknowledgements

I thank the University of Kansas, particularly the School of Social Welfare and the Gerontology Center, for my overall exceptional graduate education experience. My mentor and dissertation chairperson, Rosemary Chapin, has been instrumental in my professional development; she has provided me many opportunities to grow, push my thinking, and develop into an independent scholar. I will forever be grateful for her generosity, personal commitment to me both professionally and personally, and the chance to be on the OALTC team.

I also greatly value the mentorship and support of Terry Koenig. Her passion for the field of social work and critical thought has been very inspiring, and I highly value the many meaningful conversations and opportunities I have had to work with her. I thank David Ekerdt for his mentorship and helpful guidance throughout graduate school. Because he believed in me and my ideas, I always felt I could move forward in forging my path as a gerontologist. I very much appreciate the support and encouragement of Todd Little, particularly for pushing me to take my research to the next level. I also acknowledge several other faculty members who have positively influenced me both professionally and personally, including: Anne Williford, Mark Holter, Margaret Severson, Chris Petr, Leslie Hasche, Lori Messinger, Mary Ellen Kondrat, Mahasweta Banerjee, Toni Johnson, and Susan Kemper (whose initial support brought me to KU). I thank staff members from the KU Center for Research Methods and Data Analysis for their statistical support throughout the project, particularly Mijke Rhemtulla, Alex Schoemann, Aaron Boulton, and Terrance Jorgensen. I am grateful to Kathy DePaolis and Sarah Melius for assisting with recruitment and data collection. Many of my KU colleagues have also been critical to my success in the program; I will never forget their encouragement, moral support, and dedication. These include: Sarah Landry, Jennifer Davis, Sarah Pilgrim, Susan Frauenholtz, Roxanne Rachlin, Carrie Wendel-Hummell, Beth Baca, Sachi Gomi, Cindy Calvo-Salazar, and Grace Townley.

I am very grateful for the generous support of my dissertation research from the John A. Hartford Foundation (Pre-Dissertation Fellowship & Doctoral Fellowship) and the KU Graduate Studies (Summer Fellowship). I thank Jim Lubben, Nancy Morrow-Howell and the entire program committee for their support and mentorship and for bringing me into the Hartford family. My career has and will continue to be enriched because of this experience. I am also very indebted to the two nursing home associations in Kansas for their support letters, and to the nursing home administrators, social service staff members, and residents who participated in my study. Without their interest and support of this project, this dissertation would have been entirely impossible. I am very fortunate they were willing to share their time, stories, and resources with me. These individuals will inspire me throughout my career to continue work in improving quality of life for older adults in need of long term care services.

Finally, I dedicate this dissertation to my mother, Peggy Folkert-Thompson, whose steadfast encouragement and never-ending support has been instrumental in getting me to where I am at today. She instilled in me the confidence and self-determination to never give up, to believe in myself, and to "reach for the stars." My grandmother, Gwendolyn Moller, has and always will be an inspiration to me both for her personal journey and her educational support. I also thank my father and his wife, Don and Carrie Folkert; sister, Amber Folkert, mother-in-law, Glenna Leedahl; grandfather, Thomas Moller; *step*father, Scott Thompson, and other extended family members and close friends for being so supportive of me and for continuing to encourage me to follow my dreams. Last but certainly not least, my husband, Lane Leedahl, and my son, Finn Leedahl, are my rocks and truly the "wind beneath my wings." I could not ask for two more supportive, positive individuals in my life. Their enthusiasm and love are more important to me than anything. They provide me with a daily source of inspiration and meaning. I love you and cannot wait to see what life has in store for us in the future.

Table of Contents

List of Figures and Tables

Chapter 1: Introduction

Social isolation is strongly linked with declines in physical and mental health for older adults (Victor, Scambler, & Bond, 2009; World Health Organizations, 2002). Researchers in the 1970's, as well as a more recent study in 2002, found that older adults living in nursing homes spend the majority of their time doing little to nothing, which for many of these individuals equates to sitting in their rooms alone, inactive, and immobile (Ice, 2002). There is no question that this leads to boredom, loneliness, and isolation. On the other hand, being socially connected to others and socially integrated into communities has a positive effect on the health and well-being of all persons (Berkman & Glass, 2000; Putnam, 2000). Nursing home residents, however, face significant barriers to social integration because historically nursing homes have been cut off from the wider world by both institutional walls and societal segregation (Anderson & Dabelko-Schoeny, 2010; Goffman, 1961).

Social workers working in long term care help to ensure quality of life by providing psychosocial care for consumers through physical, psychological, and social interventions as well as family support, with the goal of promoting optimal levels of psychological, physical, and social functioning (National Association of Social Workers [NASW], 2003). As a result, avoiding social isolation by helping engage older adults who utilize long term care services, who are some of the most vulnerable in their communities, is of vital importance for social workers in working to fulfill their commitment to "enhance human well-being and help meet the basic human needs of all people" (NASW, 2008, para 1).

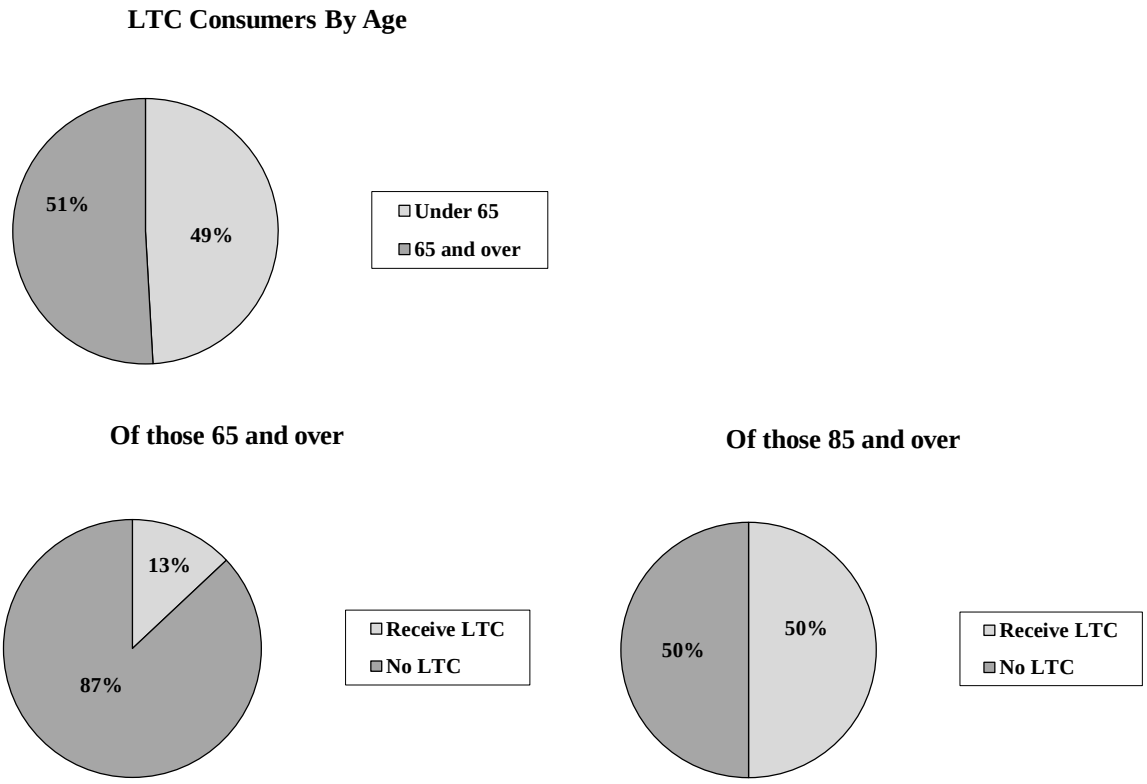
The present study focused on assessing relationships between social integration and health for older adults who receive long term care services in nursing homes. This introduction section includes a discussion of long term care in the United States and a review of social

isolation and social integration for older adults, highlighting the importance of studying older adults in nursing homes, and concludes with the rationale for the present study.

Long Term Care Population

According to the Centers for Medicare and Medicaid Services (CMS, 2012), long term care (LTC) is a comprehensive term that refers to a large variety of services and supports including "medical and non-medical care to people who have a chronic illness or disability" that helps meet health or personal needs (para 1). LTC is defined by type of assistance and is viewed as an array of services and supports often organized by care setting (CMS, 2012). Approximately twelve million people receive LTC in the United States, and about 50% are 65 years of age and older (Kaye, Harrington, & LaPlante, 2010). At least half of all persons 85 years of age and older, the fastest growing segment of the population, receive some type of long term care service, compared to 13% of persons age 65 and older who receive LTC services (Reeves & Young, 2013; Rogers & Komisar, 2003). (See Figure 1). The need for LTC is increasing because the population of those 85 years of age and older is expected to increase by 69% between 2012 and 2032, with even greater growth expected by 2050 (AARP Public Policy Institute, 2009; Houser, Fox-Grage, & Ujvari, 2012).

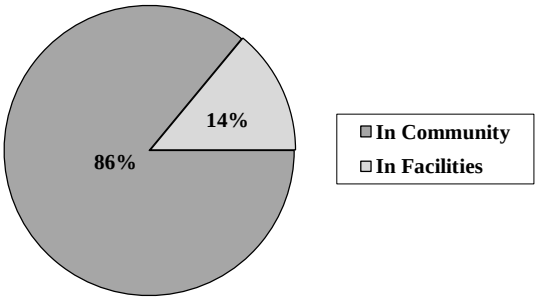
Figure 1. Long Term Care Consumers



The population who receives LTC services is considered the most 'frail,' due to high incidence of multiple illnesses and/or disabilities that keep them from functioning without outside assistance, and/or 'at-risk' for negative outcomes. 'At-risk' references a person who has an increased chance for negative outcomes due to a lack of a support system or coping skills to assist in handling complex issues, such as physical impairments, depression, symptoms of dementia, or the death of a spouse (Florio, Jensen, Hendryx, Raschko, & Mathieson, 1998). Receiving human assistance with activities of daily living (ADLs) and/or instrumental activities of daily living (IADLs) is most often used to distinguish an individual who utilizes LTC from someone who does not. ADLs include primary activities for daily functioning such as eating, dressing, and bathing, and IADLs include tasks necessary for living independently, such as shopping, managing finances, and house cleaning (Kaiser Commission on Medicaid Facts,

2012). There is considerable range in the number of ADL and IADL limitations among individuals utilizing LTC, with most needing assistance with at least a few IADLS and some requiring extensive assistance with both ADLs and IADLs (Agency for Healthcare Research and Quality, 2001). LTC can be provided in community or in facility settings. Over 85% of LTC consumers are community residents, and less than 15% reside in facilities (Kaye et al., 2010). (See Figure 2). It has become widely recognized that older adults prefer to live in their own homes as they age (AARP, 2000; Grabowski, 2006), and as such, providing community-based services is considered the preferable means for delivering LTC services in the United States.

Figure 2. Long Term Care by Environment

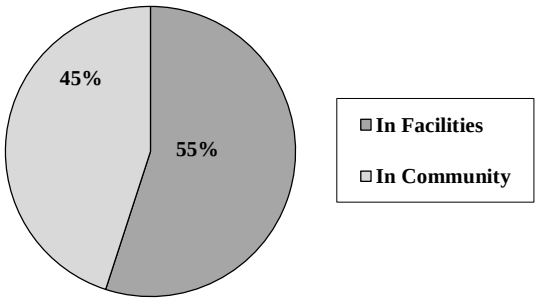


Funding

Though care in the community may be preferred and most utilized, care in nursing homes has historically received more governmental funding. Specifically, the Medicaid program is now the primary payer for LTC and accounts for 40 percent of LTC expenditures in the United States. Medicaid, enacted in 1965, is a federal and state jointly-financed medical assistance program for certain individuals who meet income guidelines, and all states have and continue to participate in Medicaid. Providing LTC in nursing homes for those who qualify has been one of the federal core requirements for Medicaid since its inception (Kaiser Commission on Medicaid and the Uninsured, 2011). Therefore, LTC in the United States is viewed to have an "institutional bias"

(Grabowski, 2006; O'Shaughnessy, Lyke, & Story, 2002). Of total Medicaid expenditures for long term care, over half (55%) is used for care in nursing homes, whereas 45% is used for community-based LTC (see Figure 3) (Kaiser Commission on Medicaid and the Uninsured, 2013).

Figure 3. Medicaid Funding by Long Term Care Environment



LTC in the community is more cost-effective than in nursing homes, and much current research examines the benefits of community care and how to avoid nursing home placement (e.g., Chapin, Baca, Macmillan, Rachlin, & Zimmerman, 2009). Recent data shows that the median monthly payment for receiving LTC in the community is $795 per month, whereas the median for nursing home care is $4,230 per month (Kaye et al., 2010). Related to this, Congress enacted the Medicaid Home and Community-Based Services (HCBS) Waiver Program as part of the 1915(c) provision of the Social Security Act in 1981. This provided states the option of providing LTC services in the community. Older adults who are frail were one of the targeted groups for the program, and the goal of the program was to help older adults who are eligible for Medicaid funding receive LTC services in their homes or in assisted living settings, therefore saving costs by avoiding extensive hospitals stays or admittance into nursing homes. Those who utilize HCBS waiver services have to meet the same eligibility criteria (e.g., level of care and financial requirements) as those who receive services in nursing homes. Services provided

through the HCBS waiver program often include medical, social, rehabilitative, personal, and supportive services (CMS, 2013a). Additionally, some states have other programs that provide LTC community services for those who do not qualify for the HCBS waiver. This is often funded through the Older Americans Act (OAA), state general funds (e.g., Senior Care Act in Kansas), or a mix of state and federal funds through the Medicaid program.

One of the goals of the recently passed federal legislation, the Affordable Care Act (ACA), is to increase access to HCBS and encourages states to further shift their Medicaid LTC budgets towards community services. Related to this, states can choose to expand their eligibility income limits and incorporate or expand programs (e.g., 1915(c) waiver programs, State Balancing Incentive Payments Program, Community First Choice Option) and receive enhanced federal match funds for doing so. However, because many states continue to face budget shortfalls, some states are actually electing to "reduce eligibility and impose more restrictive enrollment policies" (Kaiser Commission on Medicaid and the Uninsured, 2011, p. 5). Therefore, though some states may increase their community-based services budgets and programs, many older adults who are frail or at-risk will continue to encounter difficulties accessing and utilizing community-based services, which often makes care in nursing homes the only option for financial as well as safety reasons.

Nursing Homes

The idea of housing older adults in institutional settings began in the 1800s with the English poor laws that emphasized institutional living for the indigent. The indigent included people with mental illness or who are blind as well as others considered "deserving poor," which included frail older adults. At that time, older adults in need of assistance mostly lived with their children, but those without children or other family members to help them could live in the

institutions for the indigent (also referred to as poor houses). These settings did not have good reputations for the care provided. Instead, admission was discouraged, and the stigmatization of the poor houses meant that people only used them as the final option (Vladek, 1980).

Following World War II, the Hospital Survey and Construction Act, also known as the "Hill-Burton Act," provided funding for the development and construction of hospitals. Additionally, amendments to the Social Security Act in 1950 enabled payments to be made to institutions that provided care for those with disabilities and established a system for the licensing of these institutions. When the Hill-Burton Act was amended in 1954, grants also became available for the construction of nursing homes. This led to the ideology of nursing homes as part of the hospital system and the idea of nursing homes as the final stage of institutionalization before death (Vladek, 1980). As described by Vladek (1980), nursing homes, in contrast to acute hospitals, were viewed as a more cost-effective way of providing care, and therefore, standards for physical construction, facility design, and staffing patterns of nursing homes were established with the amendment to the Hill-Burton Act. With the passage of Titles 18 (Medicare) and 19 (Medicaid) to the Social Security Act in 1965, public funding for LTC in nursing homes became widely available, thus stimulating further growth of the nursing home industry and initiating federal regulation of nursing homes (Doty, 1996). Medicaid provided funding for long term care to those who met income requirements, but in order to pass the amendments, Medicare coverage for long term care was limited to a new class of extended care facilities and only for rehabilitation stays of less than 100 days (Capitman, Bishop, & Casler, 2005).

Nursing homes can elect to solely receive private-pay for services or to receive government funding (i.e., Medicare and/or Medicaid) for services. Nursing homes can be

Medicare- and Medicaid-certified, thus receiving the designation of a skilled nursing facility (SNF). Alternatively, they can be Medicaid-certified only, receiving the designation of nursing facility (NF). Being Medicare-certified means that certain beds are designated for individuals who are receiving Medicare funds for a rehabilitative stay (i.e., up to 100 days) at the nursing home following a hospital stay. Similarly, Medicaid-certified beds are designated for residents utilizing Medicaid to pay for their nursing home stay. Nursing homes that receive these designations are required to comply with federal requirements (42 CFR Part 483, Subpart B), and states are tasked with certifying and enforcing the requirements (Centers for Medicare and Medicaid Services, 2013b).

Improving the quality of care in nursing homes has been a priority for federal and state governments dating back to the 1960s, due to widespread concern about poor quality, abuse, and fraud in nursing homes. To address these concerns, the federal government imposes minimum safety and guidelines as part of the licensing and enforcement process. The Omnibus Reconciliation Act of 1987 (OBRA 87) significantly changed the quality assurance system by establishing new standards and improving the state survey and enforcement process (Weiner, Freiman & Brown, 2007). Related to this, nursing homes can be given deficiencies if they are cited for non-compliance in meeting the approximately 189 federal regulations (Forbes-Thompson, Dunton, Gajewski, Wrona, Becker, Chapin et al., 2003; Lee, Gajewski, & Thompson, 2006). Deficiencies can be cited when survey teams from state agencies come to the nursing home to complete a standard survey that occurs every nine to 15 months or after a complaint is initiated. These deficiencies encompass a broad array of categories, including quality of care, quality of life, mistreatment, nutrition and dietary, environment, and administration. Quality of care focuses on the health and safety of residents, while quality of

life refers to less tangible factors such as independence, activity, and comfort. When giving deficiencies, surveyors assign a level of severity and scope and issue enforcement remedies, which can include fines and/or directed plans of correction. Over time and without improvement, nursing homes can lose the opportunity to receive government funding, which for many nursing homes forces closure (Weiner et al., 2007). The survey process has become the primary means for the state and federal government to identify major concerns in nursing homes. As such, survey information for each nursing home is publicly accessible through a website known as Nursing Home Compare (http://www.medicare.gov/NursingHomeCompare/), which consumers can utilize to make informed decisions about moving to a nursing home. As a result, nursing homes focus great energy and resources in meeting regulations and avoiding deficiencies.

Currently, there are approximately 1.7 million nursing home beds in the United States, in which about 1.5 million residents reside. Approximately 80% of residents have lived in the nursing home for more than 91 days. Midwestern states tend to have more nursing home residents per 10,000 individuals (68.2) than states in the West (31.5), South (47.7), and Northeast (60.8). Often times, nursing home residents pay for care from multiple sources, and the sources of payment often change the longer they stay living in the nursing home. At admission, approximately 42% report private payment, 36.4% reported Medicare payments, and 34.8% reported Medicaid payments. However, when asking all current residents, only about 12.7% reported Medicare payments, with 66% paying with private funds and 59.7% reporting Medicaid payments (Jones, Dwyer, Bercovitz, & Strahan, 2009). Though Medicare does not pay for nursing home care beyond rehabilitation stays, Medicare beneficiaries living in nursing homes receive more health care services (e.g., hospitalizations) than other beneficiaries, costing the

program more than twice the average expenditure per person (Jacobson, Neuman, & Damico, 2010).

Nearly three-quarters of the nursing home population are female (71.2%). Those living in nursing homes are predominantly White (82.2%), though other race/ethnic groups are represented: African American (14.3%), Latino/Hispanic (5.1%), Asian/Pacific Islander (1.5%), and American Indian/Alaska Native (0.9%). Over half are widowed (51.7%), 18% married, and 30.3% single. About 60% graduated high school, and about 10% are college graduates. Nearly all (92.8%) have mobility impairments, 74.8% have cognitive impairments, and 37.2% have sensory (e.g., hearing, vision) impairments (Jones et al., 2009; Kaye et al., 2010).

Social Isolation

Because older adults who receive LTC services have physical impairments that limit personal mobility and because they often rely on the assistance of others to take part in activities and engage in relationships, social isolation and loneliness occur more frequently among this population than among older adults who do not receive LTC services. According to Victor, Scambler, and Bond (2009), older adults living in facility settings and those who struggle with mobility often experience a sense of 'geographical' social isolation, due to a sense of 'separateness' from society when living in a facility or feeling as if 'you can't get out' when lacking mobility.

Concerns about social isolation among the older adult population came to the forefront during the 1930s and 1940s due to the Great Depression. Specifically, the economic stress of the Great Depression contributed to declines in civic engagement and group participation across the country (Putnam, 2000). This culminated in the passage of the Social Security Act in 1935. Social Security established a system of old-age benefits for workers, which gave more older

adults the option of retiring from the workforce. Changing family structures (e.g., more divorce, increased mobility) also contributed to decreased community involvement. By the late 1960s and early 1970s, it became clear that participation in social organizations (e.g., churches, veterans' organizations, women's groups) was not keeping up with population growth. Furthermore, pressures of time and money, suburbanization, television and other electronics, and generational change have contributed to decreased community involvement overall (Putnam, 2000), particularly for older adults. With increased life expectancies and more people retiring, many older adults do not actively participate in the work force, particularly those with mobility difficulties. All of this has contributed to older adults becoming increasingly distant from the general public, thus creating concerns about social isolation among this population.

The prevalence of social isolation in the older adult population is not well-documented, and most social service assessment protocols do not screen specifically for social isolation. However, a few studies, mostly in Europe, have documented the prevalence of social isolation in older adult populations as between 2-20%, with an average of about 15% (Lubben, Blozik, Gillman, Iliffe, von Renteln Kruse, Beck et al., 2000; Victor, Scambler, Bond, & Bowling, 2000). Victor et al. (2009) in a review of multiple studies, examined factors associated with social isolation that encompassed demographic characteristics, material resources, quality of life, neighborhood resources, and social resources. The researchers determined that advanced age and being widowed increased one's chance of being socially isolated. This is consistent with other studies (e.g., McInnis & White, 2001; Van Baarsen, 2002; Van Baarsen, Smit, Snijders, & Knipscheer, 1999) in which widowhood has been shown to have a significant association with loneliness (a closely related concept to social isolation). As discussed by Victor et al. (2009), 20% of those widowed were lonely compared to one percent of those married, nine percent of

those single and never married, and eight percent of those divorced. Therefore, older adults in nursing homes are at increased risk of social isolation and loneliness due to various factors, including advanced age and increased widow/widower status.

According to Biordi & Nicholson (2009), social isolation is defined as the "distancing of an individual, psychologically or physically, or both, from his or her network of desired and needed relationships with other persons" (p. 85) and refers to the "level of integration of individuals and groups into the wider social environment" (Victor et al., 2009, p. 22). The concept of *social isolation* can be measured quantitatively to indicate one's level of social engagement, though the actual numbers of contacts that indicate social isolation are varied (Victor et al., 2009). According to Hawthorne (2006), social isolation often consists of one or more of the following attributes: loneliness, low levels of social contact, low or no social support, feelings of 'separateness,' and aloneness. Related to social isolation and often used interchangeably, *loneliness* refers to an individual's perception of not having adequate social contacts and relationships. Whereas social isolation indicates a lack of actual connection with others, loneliness is described as the state in which a deficit exists between a person's actual and desired levels of social engagement (Biordi & Nicholson, 2009; Victor et al., 2009).

Overall, research has shown that both social isolation and loneliness have similar, negative consequences for the health and well-being of older adults. For older adults aged 65 and over, studies have shown that social isolation is linked to increased mortality, elevated blood pressure, and increased propensity to cardiovascular disease, dementia, rural stress, depression, and suicide (Berkman & Glass, 2000; Findlay, 2003). Furthermore, as reviewed by Victor et al., (2009), previous research suggests associations between isolation and various health outcomes, including: poor self-rated health, poor physical health, increased chance of mental illness,

admission to LTC facilities, restricted mobility, ADLs, and low morale. Related to loneliness, a number of studies (e.g., Hawkley, Masi, Berry, & Cacioppo, 2006; Heinrich & Gullone, 2006; Lauder, Mummery, Jones, & Caperchione, 2006; McDade, Hawkley, & Cacioppo, 2006; Tomaka, Thompson, & Palacios, 2006) have established relationships between loneliness and a broad range of physical and mental health concerns, including: mortality; coronary disease; inflammation; chronic diseases; depression; and health behaviors.

Social Integration

As opposed to being socially isolated, terms are used in relation to being socially connected or integrated. *Social world,* as used by Victor et al. (2009), is used as the overarching term to encompass all aspects of social relationships and the social environment that influence older adult's social lives. *Social integration* is a broad term that refers to the degree to which an individual is connected to others and to the community (Hooyman & Kiyak, 2011). Determining individuals' level of social integration often involves understanding multiple aspects of a person's social world, including the size of social networks, frequency of contacts, membership in voluntary and religious organizations, and social participation (Berkman & Glass, 2000).

To provide history, Durkheim, in the late 1800s, established the influence of social integration on suicides, and Bowlby, in the 1970s and 1980s, discussed the importance of attachment or having close emotional relationships for children as well as for adults. Furthermore, the idea of linking social networks to health began in epidemiology in 1976 by Cassel and Cobb, who suggested a connection between social resources, support, and disease risk. Other advancements in this area have helped in understanding the link between social networks and social support to mental health outcomes (e.g., Lin, Dean, & Ensel, 1986), with the

primary focus being on the support functions that networks provide (Berkman & Glass, 2000; Berkman et al., 2000).

Study Rationale

Aspects of social integration, including having regular contacts with family, friends, or neighbors; living in close proximity to family/friends; having help available when needed; having a close confidant; and knowing neighbors, have been identified as protective factors for avoiding social isolation for older adults living in the communities (Victor et al., 2009). As such, a great deal of research has examined the relationships between aspects of social integration and health for community-dwelling older adults (e.g., Antonucci & Akiyama, 1987; Ashida & Heaney, 2008; Glass, Mendes de Leon, Bassuk, & Berkman, 2006; Jang, Mortimer, Haley, & Borenstein Graves, 2004; Mendes de Leon, Glass, & Berkman, 2003) but few studies and existing large databases contain data with these variables for older adults in nursing homes. Furthermore, as discussed by Anderson and Dabelko-Schoeny (2010), there is a need for research to help increase civic engagement (an aspect of social integration) opportunities for nursing home residents.

Studies of older adults' social worlds often do not include older adults living in nursing homes in their study samples, perhaps because of inherent differences between the two environments, difficulties in accessing those in facilities, or potential measurement differences. This lack of inclusion of those in nursing homes is problematic, as nursing homes have long struggled to provide quality care to residents, and living in nursing homes is often viewed as 'last resort' or 'less than' ideal. For some older adults, living in a nursing home is the only option due to funding limitations, a lack of social resources, or severe physical and/or cognitive impairments. Additionally, some older adults have chosen to live in a nursing home rather than a

community setting in order to ensure available care 24 hours a day, to have the company of others on a continuous basis, or avoid unsafe living environments. Importantly, nursing home residents could benefit from efforts to improve social integration similarly to community-dwelling older adults, and communities could benefit by utilizing the strengths and resources of the nursing home population.

Therefore, the target population for this study was older adults who utilize LTC in nursing homes. The purposes of this study were to: a) assess the relationships between multiple social integration constructs and health for older adults living in nursing homes using a model of social network theory, and b) examine the influence of facility characteristics on social integration for older adult nursing home residents. The two research questions were:

1) Among older adults in nursing homes, do the data support the proposed model based on social network theory?
2) What influences do facility characteristics have on social integration for older adults living in nursing homes?

This study worked to advance social work theory and research at multiple levels to aid in improving health and well-being for older adults, specifically those who utilize LTC services in nursing homes. Because this population is often excluded from study interventions or surveys, little is known about what works or what is needed to ensure older adults in nursing homes are engaged in their communities. As evidenced by an extensive meta-analysis of loneliness in older adults (Pinquart & Sorensen, 2001), older adults living in nursing homes have higher levels of loneliness than community-dwelling older adults. Though evidenced-based practices for reducing social isolation and depression are known to help older adults living in community settings (Chapin, Sergeant, Landry, Leedahl, Rachlin, Koenig, & Graham, 2013; Keller, Flatten,

& Wilhite, 1988; Morrow-Howell, et al., 2003), similar work has not been done for those in nursing homes. Therefore, this study is a first step towards learning about the relationships between social integration and health in nursing homes, which will aid in developing or modifying interventions for this population.

Overview

This dissertation is presented in five chapters. Chapter 1 introduced the target population of older adults in nursing homes and included background information on social isolation and social integration as connected to health for older adults. Chapter 2 provides a review of the theoretical and empirical literature consulted in developing this study and concludes with a summary of the three gaps in the literature this study addresses along with the study research questions and hypotheses. Chapter 3 presents the methodology for the research, including sampling, measurement, data collection, and data analysis processes. Chapter 4 provides descriptive statistics and the results of findings that answer the two research questions. Lastly, Chapter 5 summarizes the main findings, discusses study limitations, and delineates research, policy, and practice implications of the study.

Chapter 2: Theoretical and Empirical Basis

This section includes a review of theoretical and empirical literature that provided the basis for this study. First, I review the ecological framework and social network theory. An ecological framework provides a basis for thinking about the various systems of influence, which is particularly important when studying older adults in nursing homes. Social network theory utilizes ecological thinking, and a model developed by Berkman, Glass, Brissette, and Freeman (2000) provides theoretical underpinnings for establishing links between social integration and health. I then discuss the study variables for this study, including social networks, social capital, social support, social engagement, and facility characteristics, specifically the role of social work and involvement in culture change. I conclude with a discussion of the present study, including the research questions and hypotheses.

Ecological Framework

General Systems Theory

Ludwig von Bertalanffy, a biologist, began discussing systems theory in the 1920s, and in the 1930s, he formulated the ideas central to "general systems theory." This new way of thinking about systems rather than individual parts began to rise in popularity in biochemistry, physiology, and general biology, eventually being viewed in ecology as a new realm in science. General systems theory enabled the development of new methods for tackling complex real-world problems that span different disciplines, and the theory provided individuals with a broader view of how complex systems work. In general, a systems theorist recognizes that all forms of matter have properties that can be studied at various levels and can be regarded as systems (von Bertalanffy, 1972).

Though there were critics, numerous fields found general systems theory useful, including biology, economics, and the social sciences. For example, biology could study the central nervous system rather than specific body parts. As interest continued to grow, the definition of general systems theory became of interest, and though it has mathematical technicalities, the term could be used broadly across various fields. General systems theory was defined as a scientific exploration of "wholes" and "wholeness." Within that, a system was considered a set of elements standing in interrelation among them and with the environment. Further, systems must grow to stimulate insights and enthusiasm, set goals to actively pursue and accomplish, adapt to environmental changes, and secure resources. Within this, change, growth, and diversity are natural and contribute "to overall health, creativity, and development of dynamic systems" (Robbins, Chatterjee, & Canda, 2012, p. 42). The system-theoretical movement continued to gain recognition in psychiatry, behavioral science, and particularly in sociology, which as a field can be considered a "science of social systems" (von Bertalanffy, 1972).

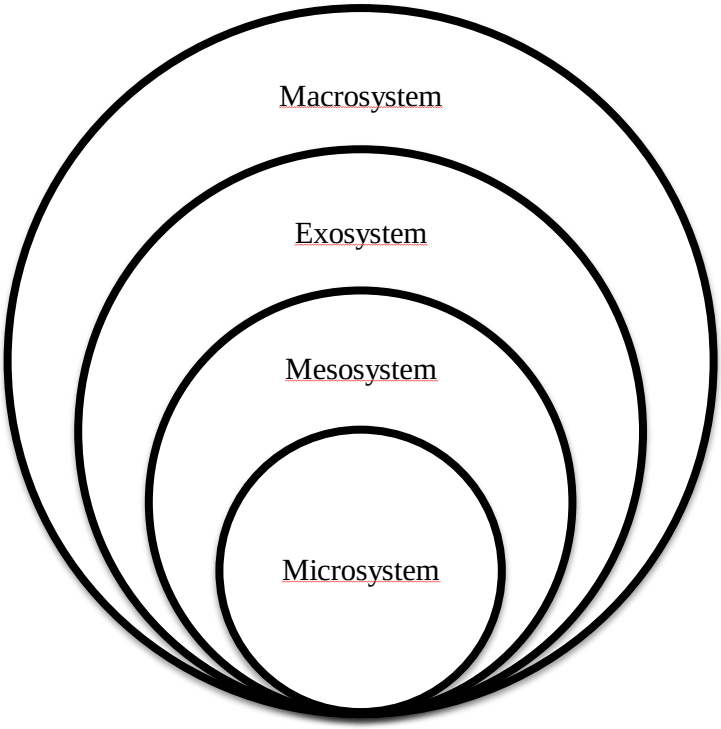
Dating back to the late 1800s, social workers, such as Jane Addams and Lillian Wald, have recognized the importance of environmental influences on life experience. Through the Settlement House movement of which Addams and Wald were prominent leaders, workers provided services to those who were poor and in need, but importantly, they also worked to develop solidarity among neighborhood residents, build a sense of community, and advocate for social, political, and economic justice (Fabricant & Fisher, 2002). As the social work profession began to shift from a psychiatric, casework focus toward increased consideration for environmental influences in the 1960s, the general systems theory provided a thoughtful rationale for a person-in-environment focus and for focusing on several levels in their work, such

as individual, family, group, community, and society, rather than just one level. In essence, general systems theory "views human behavior as the result of active interactions between people and their social systems" (Rogers, 2006, p. 29). Today, social work is a profession focused on maximizing interactions between person and environment, providing individual care (e.g., therapy, case management) and also working to change social structures for the betterment of society through policy practice work (Weismiller & Whitaker, 2012).

Ecological Thinking

'Ecological' systems thinking built upon the general systems theory. Urie Bronfenbrenner, a leading developmental psychologist and long-time professor of human development and family studies, referred to the "ecology of human development" as the study of accommodation between human and changing environments. Critical to ecological thinking is the idea of the environment as a nested arrangement of structures. See Figure 4 for a common pictorial representation of the nested ecological systems (e.g., Richard, Potvin, Kishchuk, Prlic, & Green, 1996; Sanders, Fitzgerald, & Bratteli, 2008). These nested structures are delineated into four system types: microsystem, mesosystem, exosystem and macrosystem. The microsystem includes the immediate setting in which a person engages in his or her environment. This can include activities, roles, and needs specific to various settings, such as home, school, or work. The mesosystem includes interactions of the various microsystems, such as relationships with others or the influence of one role on another role. Further, an exosystem encompasses the various settings in which people are placed and can include the major institutions in society (e.g., neighborhood, church). Finally, the macrosystem refers to overarching patterns or culture, including economic, social, educational, legal, and political systems (Bronfenbrenner, 1977).

Figure 4. Ecological Systems



Especially in social work research, understanding power influences and the perspectives of diverse and/or marginalized populations, such as older adults in nursing homes, is important. As such, the social work mission includes the importance of paying "particular attention to the needs and empowerment of people who are vulnerable, oppressed, and living in poverty" (NASW, 2008, para 1). As discussed by Solomon (1987), *empowerment* is consistent with ecological thinking. Because of power differentials within families, small groups, organizations, and communities, reducing powerlessness of those in stigmatized groups through empowerment is a priority of social work professionals. Empowerment, as a helping method, works to overcome acts, events, or conditions that keep individuals from developing effective personal and social skills and accessing resources necessary for health and well-being. Further, empowerment "refers to the process by which individuals and groups pain power to access

resources and to control the circumstances of their lives" in order to "gain the ability to achieve their highest personal and collective aspirations and goals" (Robbins, Chatterjee, & Canda, 2012, p. 87). Helping individuals by influencing various ecological system levels, where they have access to many resources, empowers them and contributes to overall health and well-being.

Gitterman and Germain (1976) further developed ecological thinking to utilize specifically in social work practice. Based on Gitterman and Germain's thinking, the purpose of the social work profession using ecological language is to help people and to promote responsive environments that support human growth, health, and satisfaction in social functioning. All persons are seen as individuals who have the desire for continued growth and the ability to develop, and the environment of which a person is a part influences one's ability to grow and develop. Environmental resources include formal service networks and informal networks of friends, family, neighbors, or organization members (Gitterman & Germain, 2008).

Because Gitterman and Germain (2008) find that social work practice has struggled to integrate knowledge of change in people and in environments and that integrating practices involving casework, group work, and community organization, they developed a "life model" that combines ecological thinking and social work functions. The goal of the life model is to give person and environment equal attention. Further, the life model emphasizes the transactions between person and environment, viewing the relationship as reciprocal. Finally, the life model emphasizes social work's purpose of shaping environment to meet people's needs while also helping people adapt to their environments.

Limitations

A number of criticisms of the ecological perspective can be found. Unger (2002) states that the ecological model does not explain why things happen or why connections exist, thus is

not helpful for directly informing practice. Further, because constructs are imprecisely defined and ideas are very abstract, little controlled research has been conducted using multilevel approaches, which again makes informing practice and policy advancements difficult. Additionally, Reid (2002) finds that the multilevel approaches, such as systems theory and ecological theory, do not resolve power influences or address diverse and/or marginalized populations, which results in unaddressed discrimination and oppression.

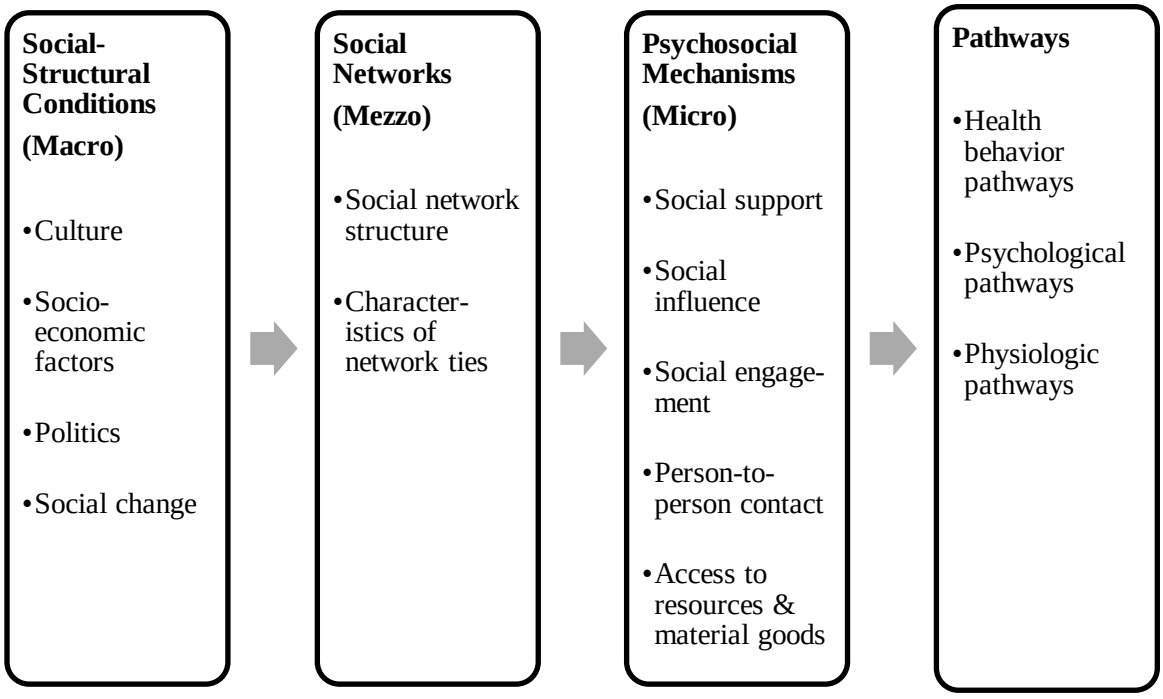
Though the ecological perspective has a number of limitations and may not be a useful theory by itself for empirical testing, it is particularly useful as an overarching framework to guide research and practice. Recognizing the limitations helps in identifying a theory or theories to assist with empirical testing. I used an ecological framework in this study to help to take into account individual and environmental (e.g., neighborhood) influences on the social worlds of older adults, particularly in relation to how they influence health outcomes. Though a number of theories have been used to study the social worlds of older adults (e.g., activity theory, role identity theory, continuity theory, socioemotional selectivity theory, social exchange theory, social capital theory), only social network theory captures the essential elements of the ecological perspective and provides a means for testing connections to health outcomes.

Social Network Theory

Social network theory provides a comprehensive understanding of how social networks influence health. The premise of social network theory is that "the social structure of the network itself is largely responsible for determining individual behavior and attitudes by shaping the flow of resources which determine access to opportunities and constraints on behavior" (Berkman et al., 2000, p. 845). To advance social network theory and research, Berkman et al. (2000) developed a comprehensive framework that extends social network research to consider

social contexts and the structural underpinnings in which social support is provided. Corresponding closely with the ecological perspective, the Berkman et al. model (2000) utilizes systems-level thinking to explain how social networks influence health, and it incorporates environmental concepts (e.g., culture) and multiple psychosocial mechanisms. This model provides a representation of how macro-social and psycho-biological processes are linked, which helps explain how social networks influence health outcomes. This is especially useful for embedding the social worlds of older adults into health and well-being outcomes. Figure 5 provides a summary of the model of how social networks influence health outcomes.

Figure 5. Summary of the Berkman et al. (2000) Conceptual Model of How Social Networks Influence Health



In the model, macro-level forces—social structural conditions, including culture, socioeconomic factors, and politics—influence mezzo-level (mix of meso- and exo-levels) forces—the structure of social networks and the characteristics of network ties. These, in turn,

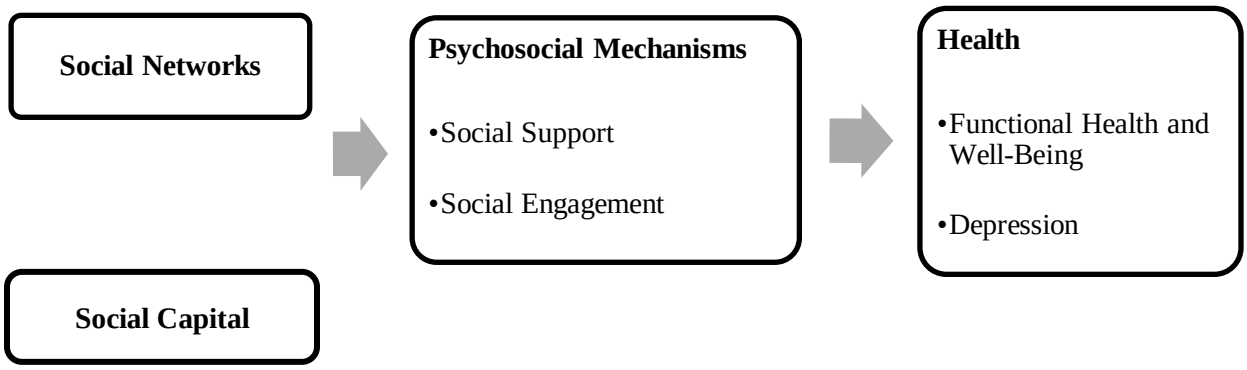
provide opportunities for micro-level forces—psychosocial mechanisms, such as social support, social influence, social engagement, person-to-person contact, and access to resources and material goods—that influence health through health behavioral, psychological, and physiological pathways.[1] To re-emphasize, this conceptual model is embedded in ecological thinking and encompasses a number of the environmental features important for improving people's social worlds, particularly in relation to health outcomes.

Multiple Social Integration Concepts and Health

As previously discussed, *social integration* is a broad concept that refers to individuals' level of connectedness to others and to the community. In the research literature, the terms *social network*, *social capital,* and *social support* are used most often in studies of the various aspects of social integration related to health outcomes, and *social engagement* is increasingly being used. In this study, I assessed the influence of social integration on health outcomes by testing a model in which social networks influence health functioning/behaviors and mental health indirectly through the psychosocial mechanisms of social support and social engagement; this was directly derived from the Berkman et al. (2000) model. In addition, I incorporated the concept of social capital into the model in order to test whether or not it helps predict health outcomes for the study population. See Figure 6 for the conceptual model of the study variables. A description of the key concepts of social integration utilized in this study and their connections to health outcomes follows.

[1]For a complete description and detailed pictorial representation of this conceptual model, see Berkman, Glass, Brissette and Seeman (2000).

Figure 6. Conceptual Map for Study Variables



Social Networks

In the 1950s, British anthropologists Barnes and Bott introduced the concept of *social networks* as a way to view structural properties of relationships among people. Network analysis research, in which the characteristics of social ties as well as the contents or specific resources that flow through these ties could be calculated and mapped, was later introduced (Berkman et al., 2000). Within this research, various operational definitions for social networks have been used, most of which emphasized the structure of these networks, including number of close contacts or membership in associations. Although the research clearly predicted health outcomes, concerns arose regarding whether the measures actually captured the conceptual understanding of social networks.

Therefore, the need for more standard network measures brought about a second wave of social network research in the 1980s and 1990s (Berkman & Glass, 2000; Berkman et al., 2000). Health psychology was the primary field that changed the orientation of social network research, which focused on the provision of social support rather than the previously described structural aspects of social networks. Various researchers contributed to this knowledge base, notably Kahn and Antonucci (1980), who developed the convoy model of viewing individuals as being

surrounded by members of their cohorts who provide support to one another over time (Antonucci & Akiyama, 1987).

In the Berkman et al. (2000) article in which a model for social network theory is introduced, the authors recognize that current studies tend to use the terms *social networks*, *social support*, *social ties*, and *social integration* interchangeably, often studying how network structure and the provision of social support influence health, which can be confusing. To help clarify terms, Berkman and Glass (2000) conceptually define social networks as a "web of social relationships that surround an individual and the characteristics of those ties" (p. 847). Further, Smith and Christakis (2008), in a review article, purposely describe social network research in comparison to social support research. As such, social network research is recognized as broad and as studying webs of social relations in contrast to the more common, social support research, which assesses the quality of a person's social relations.

Further explaining social networks, social network analyses are described as either studying egocentric networks, with the individual as the focal point, or sociocentric networks, with all members of a community or group and links represented. Egocentric studies often include dyads, such as a married couple, child/parent, siblings, or friends. Supradyadic studies, the newest research for social networks and health, requires extensive mapping of individuals' social networks. Studies using supradyadic effects have been completed showing connections between obesity, smoking, alcohol consumption, health utilization, and the spread of sexually transmitted disease within social networks (Smith & Christakis, 2008). Operationally, research studies often use numbers of close friends and relatives, marital status, or affiliation or membership in religious and voluntary associations to measure one's social network (e.g., Berkman, 1995; Cohen, 1988; House, Landis, & Umberson, 1988).

Research shows that social networks positively influence cognitive and emotional states, including self-esteem, social competence, self-efficacy, depression, and affect. People, who deal with difficulties in life, such as depression, coping with abortion, smoking cessation, and stress, are better able to develop functional and adaptive coping styles to assist them through the difficult times if they have support (Smith & Christakis, 2008). Additionally, a few studies have found that social networks can help decrease depressive symptoms, depending on the adequacy of the social support within the social network (Berkman & Glass, 2000).

Social Capital

Social capital is a sociological concept, analogous with economic capital, in that social networks influence the productivity of individuals and groups thus creating an economic gain. Using the early work of Bourdieu, Loury, and Coleman, Portes (1998) stated that social capital has evolved to stand for "the ability of actors to secure benefits by virtue of membership in social networks or other social structures" (p. 4). According to Putnam (1995), a political scientist and Professor of Public Policy, who popularized the term, "social capital refers to features of social organization, such as networks, norms, and social trust that facilitate coordination and communication for mutual benefit" (p. 67). Putnam also stresses that three elements are critical for understanding social capital: social networks, norms of reciprocity, and trust. Portes (1998) describes Putnam's contribution to social capital as having re-defined social capital to be a feature of communities and nations rather than an individual phenomenon, but Portes argues that further theoretical work is needed to fully re-define the concept.

More recently, Ferlander (2007) reviewed the importance of different forms of social capital for health. She also refers to Bourdieu, Coleman, and Putnam's work on social capital, discussing it in relation to, but not synonymously with, with social cohesion and sense of

community. Ferlander (2007) defines social capital using structural and cognitive aspects, which encompass the three elements of Putnam's definition (social networks, norms of reciprocity, and trust), stating that social networks are the core element, but that the networks break down without reciprocal norms and trust. For older adults, involvement in reciprocal exchanges (i.e., being able to help others who help them) remains important as they age and need LTC assistance. Identifying meaningful roles and activities for older adults who utilize LTC to continue to contribute in relationships or groups is important for self-esteem, life satisfaction, and physical and mental health (Hooyman & Kiyak, 2011). Though older adults may have accrued social capital through social networks and social trust throughout their lives, there is a continued need to reciprocate within relationships in order to maintain and potentially increase levels of social capital. For those who may not have built up their social capital and/or need to acquire social capital, contributing knowledge or skills to social networks is also important.

Social capital can also be measured at two levels. At the individual level, measures of social connections and social support are used; however, this often makes differentiating social capital from social networks and social support difficult. At the collective level, social capital is measured by questions of trust, often labeled *social trust* or *neighborhood social cohesion*. The most common measurement indicators for social capital, particularly for health studies, have been membership in voluntary associations and generalized social trust (Ferlander, 2007).

Literature shows social capital as a predictor of a number of positive consequences, such as academic performance (e.g., Coleman, 1988) and sources of employment (Lin, 2001). Of utmost importance to this work, however, is the influence of social capital on health outcomes (Putnam, 2000). As examples, social capital has been linked to morbidity/mortality, self-rated health, mental health, and health behaviors, such as smoking, physical activity, diet, disease, and

survival when ill (Ferlander, 2007). Social groups, in particular, have also been shown to contribute to an increase in people's self-reported health (Poortinga, 2005).

Social Support

Social support consists of emotional, social, physical, and financial resources as well as other types of care provided by others (Berkman & Glass, 2000). Caplan (1974), Cassel (1976), and Cobb (1976) introduced social support research in the 1970s. In the 1980s, numerous researchers built on this work, further establishing the importance of the relationship between social support and physical and mental health (e.g., depression, cancer, birth complications, psychological distress) (Barrera, 1986). Currently, the concept of social support continues to be used throughout the literature in various fields (e.g., psychology, sociology, medicine, social work) and in various areas of research (e.g., children and families, aging, mental health).

In a 1993 review of medical, psychological, and social literature about the importance of social support to health, Callaghan and Morrisey conceptually define social support as "an exchange of resources between at least two individuals perceived by the provider or recipient to be intended to enhance the well-being of the recipient" (p. 203). As such, social support is considered the primary pathway by which social networks influence physical and mental health status (Berkman et al., 2000).

Barrera (1986), also working to disentangle *social support*, operationalized the concept into three categories: a) social embeddedness that includes connections between individuals in social environments; b) perceived social support described as availability and adequacy of supportive ties, and c) enacted support that are actions and assistance actually provided by others. Social support often encompasses the qualitative aspects of social relations and generally includes emotional, instrumental, appraisal, and informational support (Berkman & Glass, 2000).

Specific measures of social support can include structural features (size and composition of network), frequency of interactions, content and quality of support, and perceptions of adequacy (Seibert, Mutran, & Reitzes, 1999).

Having adequate social support has been shown to increase positive outcomes for older adults specifically in the areas of long term care, health, community participation, security, and sustained independent living (Antonucci & Akiyama, 1987; World Health Organizations, 2002). Finally, as reviewed by Berkman and Glass (2000), a vast literature dating back thirty years has established links between social networks and social support and physical and mental health, specifically all-cause mortality, cardiovascular disease, stroke, and infectious disease.

Social Engagement

Social engagement refers to the enactment of potential ties in real life activities within the communities in which people live, such as getting together with friends, attending social functions, participating in roles, group recreation, and church attendance (Berkman et al., 2000). Social engagement is defined as "performance of meaningful social roles for either leisure or productive activity" (Glass et al., 2006, p. 606). Social engagement has been conceptualized to include productive activities (i.e., activities that generate goods or services for an economic value, such as preparing meals, completing volunteer work, or having paid employment) and social or leisure activities (i.e., activities that involve talking with others or taking part in activities with others that are enjoyable, such as going to a movie or playing cards). Measures of social engagement often include a single summary index that encompasses multiple aspects of engagement without differentiating between the different aspects (i.e., productive versus social) (Mendes de Leon et al., 2003).

One aspect of social engagement, *civic engagement*, is a current priority for research, practice, and policies for older adults, as evidenced by current federal and foundation initiatives (e.g., Civic Engagement in an Older America project, 2004) (National Academy on an Aging Society, n.d.). Civic engagement is defined as "the process in which individuals actively participate in the life of their communities through individual and collective activities, such as voting, joining community groups, and service volunteering, oftentimes in nonprofits" (Hooyman & Kiyak, 2001, p. 524), and the terms volunteerism and civic engagement are often used interchangeably. Increasingly, older adults are seen as a civic resources for addressing community needs, therefore researchers in multiple fields are identifying and examining various initiatives and programs for promoting civic engagement among older adults (Martinson & Minkler, 2006), though mostly older adults living in the community.

Social engagement has been shown to influence health, namely mortality, disability, and health care expenditures (Mendes de Leon et al., 2003). Further, relationships between civic engagement/volunteering and health are quite clear, with researchers (e.g., Morrow-Howell, Hinterlong, Rozario, & Tang, 2003) finding that even low levels of involvement can influence well-being. In fact, researchers now are working to understand exactly how much volunteering is ideal or at what point too much volunteering contributes to negative health outcomes (e.g., Matz-Costa, Besen, Boone James, & Pitt-Catsouphes, in press).

In conclusion, the terms *social networks*, *social capital*, *social support*, and *social engagement*, each have distinct features related to social integration, yet all relate to one another with some overlapping definitions. Additionally, each of these concepts has been shown to predict or influence various physical and mental health outcomes in multiple studies that include comparison groups and longitudinal design. For this study, the focus was on assessing social

networks that may provide increased opportunities for social support and social engagement and the influence of social capital, which may influence positive physical and mental health outcomes for older adults. Therefore, based on the previous research and use of social network theory, this study assessed predictive relationships between the social integration concepts and functional health and well-being and depression for older adults in nursing homes.

Facility Characteristics

In addition to the focus on the relationships between social integration and health for older adult nursing home residents, this study proposes a preliminary, exploratory examination of the influence of facility characteristics (Glisson, 2002) on these relationships. The facility characteristics of interest for this study include: a) role of social workers b) culture change involvement.

Social Work

As defined by the National Association for Social Workers (NASW, 2013), *social workers* are licensed (through the state) professionals who graduate from schools of social work with bachelor's, master's, or doctoral degrees. In the nursing home setting, social workers are specifically trained to provide psychosocial care. They aid residents and family members in adjusting to the nursing home setting, preserve and enhance social functioning, and provide services to optimize quality of life (NASW, 2003). Of importance to understanding social work professionalism, social workers are guided by the values, principles, and standards of the NASW Code of Ethics. This Code indicates that the well-being of clients is the primary responsibility of the social worker, and social workers are specifically trained to consider the person-in-environment framework, in congruence with the ecological perspective, when working with

clients (NASW, 2008). However, there are mixed views between the NASW and the federal government about the definition and importance of a nursing home *social worker.*

OBRA of 1987 requires nursing homes (SNFs) to "provide services and activities to attain or maintain the highest practicable physical, mental, and psychosocial well-being of each resident in accordance with a written plan of care" (sub-section b-2) and specifies that services "must be provided by qualified persons" (sub-section b-4). Related to ensuring qualified persons for providing psychosocial care, this legislation states that a nursing home with over 120 beds is required to employ a minimum of one full-time social worker with at least a bachelors' degree in social work *or* another human service field, and one year of supervised social work experience in a health care setting working directly with individuals. For facilities with 120 beds or less, medically-related social services must still be provided, but there is *no* specific requirement that they be performed by a qualified social worker, on either a full-time or part-time basis (Rehnquist, 2003).

As a result of this legislation, many nursing homes do not have social workers that meet the NASW definition, and only about half of the social service directors in nursing homes in the United States have an earned degree in social work (Bern-Klug et al., 2009). In Kansas and some other states, social service staff can be considered qualified if they receive training (e.g., one 3-credit course at a community college) to serve as a Social Service Designee (SSD). This is a concern because research has shown that having degreed social workers on staff contributes to providing higher quality psychosocial care for nursing home residents (Simons, Bern-Klug, & An, 2012). In addition, a number of constraints have been reported that hinder social work practice in nursing homes including confusion about the skills, values, and training involved in getting a social work degree; high caseloads; and massive amounts of paperwork to ensure

compliance with various standards and regulations (Simons et al., 2012). Systematic inquiry is needed to further understand the influence of social workers on specific resident outcomes in order to address barriers and identify strategies and policies for better utilizing social workers in nursing homes.

Culture Change

A grassroots movement has swept through the nursing home industry, causing people to re-think how residents and staff are viewed and treated in the traditional, hospital-based nursing home setting. The term "culture change" was coined in 1997 during the first meeting of the Nursing Home Pioneers, now the Pioneer Network. Nursing homes that embrace culture change utilize a social, regenerative model of care in which residents are viewed and treated in ways that encourage growth, development, and production through improvement in the social, psychological, and physical environments of their new home. The overall goal of the culture change movement "goes beyond superficial changes to an inevitable reexamination of attitudes and behavior, and a slow and comprehensive set of fundamental reforms" (Rahman & Schnelle, 2008, p. 142). The idea of culture change is to empower frontline staff and develop an environment in which residents' quality of life improves through increased decision-making and potentialities for growth.

Culture change in nursing homes has grown in popularity in the last ten years, has been endorsed by the Centers of Medicare and Medicaid Services, and is now considered a best practice for providing care to older adult nursing home residents (Rahman & Schnelle, 2008; Stone, 2003). There are a number of models associated with the culture change movement, such as the Eden Alternative, which emphasizes interaction with children, pets, and plants; the Wellspring model, which focuses on teaching staff the best clinical practices and environmental

changes (Kehoe & VanHeesch, 2003); and the Pioneer Network, which promotes attitudinal change toward aging and older adults in enhancing quality of life (Fagan, 2003; Rahman & Schnelle, 2008; Stone, 2003). Because there was not a consensus definition or a set framework for culture change, the Commonwealth Fund (Doty, Koren, & Sturla, 2008) gathered an expert panel together who developed a definition of culture that includes six themes: a) care and all resident-related activities that are directed by the resident; b) a living environment that is designed to be a home rather than an institution; c) close relationships existing between residents, family members, staff and community; d) work organized to support and empower all staff to respond to residents' needs and desires; e) management enabling collaborative and decentralized decision-making; f) systematic processes that are comprehensive and measurement-based, and that are used for continuous quality improvement.

There are a number of identified barriers to advancing nursing home care with the culture change movement. Related to public policy, the survey process regulations do not necessarily correspond with culture change practices (Capitman et al., 2005; Rahman & Schnelle, 2008). With nursing homes being required to follow certain policy regulations or face monetary penalties, many nursing homes avoid changing their practices in order to avoid regulation difficulties. Second, due to low reimbursement rates, nursing homes often operate with limited resources. Therefore, altering environments and re-training staff to meet culture change practices is viewed by many nursing homes as expensive, and thus cost is considered a barrier to adapting culture change practices (Capitman et al., 2005). Third, many nursing homes and nursing home staff utilize practices that have been well established and ingrained in the culture of the nursing home and the mindsets of the staff. Therefore, any amount of change, let alone the extensive change involved in moving toward culture change, is resisted and avoided,

especially considering the lack of public funds and policies related to culture change initiatives (Capitman et al., 2005; Stone, 2003).

Finally, culture change initiatives have not been empirically evaluated and much of the evaluation research that has been done is not considered rigorous as case studies or anecdotal reports have been mostly used. Though it is considered a "best practice," research literature does not provide solid evidence of the efficacy of culture change strategies, leaving the changes "mostly untested and their outcomes somewhat uncertain" (Rahman & Schnelle, 2008, p. 145). Because of this, the various culture change models risk being labeled as 'just another model that came and went' due to a lack of systematic implementation, available tools and protocols, proven success, and a record of sustainability (Stone, 2003). Though the culture change movement has gained momentum in recent years with the endorsement of CMS and continued support by experts in the field, the lack of outcome research has made it difficult to communicate the precise definition of culture change and inform providers of expected outcomes of the various culture change components.

The Present Study

This study works to fill three gaps in the literature. First, there is vast literature establishing the influence of social integration on health for older adults, and most studies utilize older adults living in the community for their study samples. Therefore, there is a need to study those living in nursing homes, specifically assessing the relevance of social network theory for this population. Second, various terms and measures have been used in the literature to denote being socially connected, and most studies focus on only social networks or social support or aspects of either concept. Therefore, further work is needed to help conceptualize and operationalize the multiple aspects of social integration (i.e., social capital, social networks,

social support, and social engagement), using well-defined conceptual definitions and operational measures, for studying the lives of older adults. This could help differentiate these variables and determine what particular aspects of social integration could be targeted in interventions for improving physical and mental health of older adults in nursing homes. Third, long term care literature has documented the importance of the role of social work in long term care as well as the benefits of culture change in nursing homes. However, there is a need for evidence documenting the effectiveness of social work and culture change involvement on resident outcomes, in order to convince policy makers and nursing home administrators of their importance. This study had two research questions and four hypotheses.

Research Question 1

The first research question was: among older adults in nursing homes, do the data support the proposed model based on social network theory? The objective of this research question was to verify the Berkman et al. (2000) model for predicting the influence of social integration on health for older adults within nursing homes, and potentially improve the model by adding the concept of *social capital* to the model. Two hypotheses were tested to answer this research question. In accordance with the Berkman et al. (2000) framework for social network theory and with supporting past research (Ashida & Heaney, 2008; Callaghan & Morrisey, 1993; Fraser & Rodgers, 2009; Jang et al., 2004), there is an indirect relationship between social networks and health (i.e., functional health/well-being and depression) through social support and social engagement (Hypothesis 1.1). Second, given that social capital has been shown to influence health outcomes for older adults (Ferlander, 2007), the unique effects of social capital in addition to the unique effects of social networks will significantly predict variance in health outcomes (Hypothesis 1.2).

Research Question 2

The second research question was: what influences do facility characteristics have on social integration for older adults living in nursing homes? The objective of this research question was to do a preliminary examination of potential relationships between the role of social work and culture change involvement on social integration across nursing homes, as this is currently unknown. On the basis of past research, the hypotheses for this research question were that two facility characteristics would have predictive relationships with social integration between nursing homes. The characteristics included: the number of social workers (Bern-Klug et al., 2009; Simons, 2006) (Hypothesis 2.1), and having greater involvement in culture change activities (i.e., choice for residents, improving quality of care, staff empowerment, and creating a homelike setting) (Bott et al., 2009; Kane, 2001) (Hypothesis 2.2).

Chapter 3: Methods

Design

In this study, I utilized quantitative research methods to assess relationships between multiple aspects of social integration and health by using a survey questionnaire in structured in-person interviews with older adult residents living in nursing homes and by having nursing home administrators and social service directors complete brief survey questionnaires. The approach involved cross-sectional data analyzed using multilevel structural equation modeling (MSEM), in which individual-level (i.e., within-level) and group-level (i.e., between-level) data were used to answer research questions. The following section details the design and methodology used in this study.

Sampling Strategy

I utilized a two-stage multilevel sampling technique to obtain: a) a stratified random sample of nursing homes (N = 30), and b) a random sample of older adult residents from each of the nursing homes (N = 140, from each facility n = 3-6). The Human Subjects Committee of Lawrence (HSCL), the University of Kansas Institutional Review Board, reviewed and approved all sampling and recruitment procedures. Further, informed consent was obtained from every nursing home administrator, social service director (SSD), and resident. Because the residents are considered *institutionalized*, extra precautions were taken to ensure residents personally consented to participation and understood interview procedures prior to interviewers entering the nursing home. Three trained interviewers, including myself, made phone calls to administrators, followed up with SSDs, and completed interviews.

Nursing Home Sample

The goal was to obtain 30 nursing home participants. Approximately 30 level two units are needed to conduct MSEM (Bickel, 2007), and according to Kreft and De Leeuw (1998), 30 is the smallest acceptable number for conducting multilevel analyses. In order to obtain a stratified, random sample of 30 nursing homes for this study, I compiled a list of nursing homes (i.e., nursing facilities licensed to provide skilled nursing care) within 15 counties (i.e. Atchison, Anderson, Douglas, Franklin, Jackson, Jefferson, Johnson, Leavenworth, Linn, Miami, Pottawatomie, Osage, Shawnee, Waubaunsee, Wyandotte) in Northeast Kansas using the Directory of Adult Care Homes compiled by the Kansas Department on Aging (now called the Kansas Department for Aging and Disability Services) and updated through April 1, 2011. At the time of data collection, there were 78 nursing homes qualified for participation in the study from these counties. These counties, representing the most populated in the state, were chosen to limit the sample to nursing homes in areas with access to similar community resources and to ensure feasibility of data collection. As most of these counties are close to large cities, most of the facilities are larger (M = 100.64 beds, SD = 53.81, range = 17-269) than the Kansas average (M = 81.78 beds, SD = 43.10, range = 17-298).

I stratified the list of nursing homes into two groups: a) facilities with more than 120 licensed beds (i.e., larger facilities) (n = 20), and b) facilities with 120 licensed beds or less (i.e., smaller facilities) (n = 58). This was done in order to ensure adequate representation of nursing homes required to have a degreed social worker on staff (i.e., larger facilities) versus nursing homes not required to have a degreed social worker (i.e., smaller facilities). Because the second research question asked about the role of social workers, it was important to stratify the sample using this method.

Next, using statistical software, the nursing homes were randomly ordered, and placed on one of three interviewer's lists. Each interviewer's list contained larger facilities and smaller facilities. Each interviewer made phone calls to administrators starting at the top of the lists until 30 agreed to participate, with the goal of obtaining at least 20-30% of the total sample from larger facilities. Once administrators agreed to have their facility participate, they directed us to the social service director (SSD), who then also had to agree to participate in the study and to assist in obtaining the random sample of nursing home residents from their facility.

Resident Sample

Prior to this study, a power analysis for computing minimum sample size for root mean square error of approximation (RMSEA) indicated that 56 subjects would provide over 80% power (power = 0.80), with 118 degrees of freedom (*df*) and an alpha value of 0.05 (Preacher & Coffman, 2006). However, to ensure adequate sample size for conducting CFA and SEM using maximum likelihood (ML) estimation, a sample between 100-150 is recommended (Schumacker & Lomax, 1996). ML estimation is an asymptotic estimator, and a sample size of 120 satisfies the demand of the ML estimator (Little, in press). Therefore, 120 was the target sample size for older adult nursing home residents in this study.

To obtain a random sample of nursing home residents from each nursing home, I provided the SSD a list of four inclusion criteria for residents eligible to participate in the study. The inclusion criteria ensured residents: a) were at least 65 years of age, b) had lived in the nursing home for at least four months (i.e., beyond the 100-day Medicare window for a short-term rehabilitation stay), c) did not have a legal guardian, and d) did not have moderate to severe cognitive impairment (i.e., MDS 3.0 Brief Interview for Mental Status scores between 0-12 or MDS 2.0 Cognitive Scale scores between 3-10 indicating moderate to severe cognitive

impairment). These inclusion criteria were utilized to ensure each resident was considered an older adult according to Medicaid guidelines, was considered a long-term resident of the facility, could personally consent to participation, and were cognitively able to answer the questions on the survey. According to national statistics, approximately 88% of residents are 65 years of age and older, 80% are considered long-term residents, and 25% do not have cognitive impairment (Kaye et al., 2010).

Based on the inclusion criteria, the SSD identified residents from the facility who were eligible to participate in the study and compiled a list. We utilized standardized criteria to decide how many residents to try to interview (i.e., 59 beds or less = 3 nursing home residents; 60-90 beds = 4 nursing home residents; 90 or more beds = 5 nursing home residents), and we asked the SSD to ask 1-2 more residents than needed to meet the target sample size in case someone declined or was unavailable when we came to complete the interviews. If the facility had more residents than needed, the SSD gave them identification (ID) numbers (#s) to ensure anonymity and then contacted us to randomly select participants. Once the random list of residents was generated, he or she then contacted the residents to ask about participation and receive permission for interviewers to come meet with them.

Recruitment

Through previous research, I had developed relationships with nursing home associations and some nursing homes across the state, which aided in recruitment for the study. Recruitment procedures were as follows. Nursing home administrators were mailed a letter describing the study's purpose; I also included letters of support for the study from the for profit and not-for-profit nursing home associations if the nursing homes were members of these organizations. Administrators were then contacted by telephone and asked if they would be willing to

participate in the study. Administrators were contacted three times via phone or email before ceasing contact. If administrators showed interest in participating at some point, we continued to contact administrators via phone or email until they either agreed or disagreed to participation or until we reached at least three additional contacts.

Administrators who agreed to participate put us in contact (via phone and/or email) with the SSD or lead social services worker. The SSDs were given the list of inclusion criteria, a recruitment script for discussing the study with residents, and a permission form for residents to sign agreeing to have interviewers come to the nursing home. We then worked with the SSD to identify a date to interview the residents who agreed to participate. On the selected date, an interviewer or interviewers went to the nursing home and worked with the SSD to meet with each resident.

As interviewers, we strived to give residents' control over the time and place of the interview. Thus, we worked with residents to schedule the interview around other activities they had planned for the day and let residents decide where they wanted to complete the interview (e.g., his/her room, quiet room, dining room). When meeting with each resident, we worked to build an atmosphere of equality by requesting permission to sit and speak to each resident. As many of the interviews were completed in residents' room, we brought along chairs that could easily be placed in front of residents wherever they were sitting (e.g., recliners, wheelchairs) such that each interview was conducted at eye level. This also ensured we did not sit on residents' beds. Interviewers began each interview by going through informed consent procedures that involved further describing the purpose of the study and informing the residents of their right to refuse or withdraw from participation in the study at any time. We were committed to taking ample time with residents in order to explain the purpose of the study and to

answer questions before obtaining informed consent. To facilitate reading, large print font was used on the informed consent form in a font that is easy-to-read.

Compensation

To compensate individuals for participation in the study, each nursing home administrator, SSD, and older adult resident was offered $20 cash or a gift card for personal use. The interviewers obtained the necessary information for subject payment processing. Each participant received a receipt form. Importantly, the project received a waiver of the requirement that Social Security Numbers be collected for nursing home resident participants. Nearly all residents (94.3%) and administrators and SSDs (88.3%) accepted the payment; the remaining declined or lived in nursing homes that did not permit payments to staff or residents.

Data Collection

Overall, I was responsible for coordinating all data collection efforts, and I completed 53% of the interviews. In addition, two research assistants (one masters-level social work student and one PhD-level social work student) were hired to assist with recruitment efforts and resident interviews due to the size of the data collection. Thus, there were three trained interviewers who completed the interviews with the nursing home residents. All data collection procedures were approved by the HSCL on April 4, 2011, with amendments approved on May 6, June 10, and July 20, 2011. Data collection occurred between May 2011 and January 2012.

Resident Interviews

The older adult nursing home residents in the study were asked questions from a standardized survey during in-person interviews. Residents' self-report of their own experience is considered the "gold standard" in this type of research (Kane & Kane, 2003; Rubinstein, 2000); therefore, the use of a proxy was not permitted in this study.

The proposed model for the study was designed to examine the social worlds of older adult nursing home residents, and this required multiple questions related to residents' social integration. As suggested by Carp (1989), one hour is the maximum amount of time an interview should take with older adults, in order to avoid fatigue. Further, respondents are less likely to answer all questions in lengthy surveys, which can lead to high rates of non-responses (Graham, Hofer, & MacKinnon, 1996), and in fact, when participants have fewer questions to answer or fewer repeated measurements, they are less likely to be fatigued and thus, more likely to offer high-quality data (Raghunathan & Grizzle, 1995).

Due to these various considerations, a planned missing data design was utilized to ensure the interviews did not take longer than one hour. This specialized methodological technique allows researchers to utilize the full set of questionnaire items while reducing respondent burden (Enders, 2010). Further, a planned missing data design "allows researchers to leverage limited resources to collect data for 33% more survey questions than can be answered by any 1 respondent" (Graham, Taylor, Olchowski, & Cumsille, 2006, p. 323). Dattalo (2010) argues that social work researchers are ethically obligated to construct the smallest representative samples possible. This was particularly germane with the frail, older adult population and to this study. As such, a planned missing data design provided a cost-effective, time-efficient method for obtaining a lot of information on a smaller sample (Dattalo, 2010).

The 3-Form planned missing data design was used (Graham et al., 2006). With this design, items are divided into four items sets (X, A, B, and C). Questions in the X set were asked of every participant. This included all questions from the social networks construct, one key question within each construct (i.e., reference variable), and all demographic variables. The other questions were randomly assigned to either the A, B, or C sets (see Table 1), and the order

of the items was varied across the different sets of items to control for order effects. Every participant answered some items from every measure. The 3-form design is flexible, and it is acceptable to have an unequal number of questionnaire items on each item set (Enders, 2010).

Each form had approximately the same number of questions (Form 1 = 86, Form 2 = 84, Form 3 = 86). Participants were randomly selected to receive a form, and the number of participants completing each form was roughly equivalent (Form 1 = 45, Form 2 = 50, and Form 3 = 45).

Table 1. 3-Form Planned Missing Data Design

Form	Set X	Set A	Set B	Set C
1	All	1/3 of variables	1/3 of variables	None
2	All	1/3 of variables	None	1/3 of variables
3	All	None	1/3 of variables	1/3 of variables

The drawback to the 3-form design is that some correlations, because they are based on only one-third of the sample, are tested with lower power. However, as Graham (2009) states, "virtually all of the possible drawbacks are under the researcher's control and can generally be avoided" (p. 566). Though power is lost when conducting a planned missing data design due to the loss in number of observations, the loss of power is gained back and thus is nearly fully recoverable through the data imputation process (Graham et al., 2006).

Standardized Measures

The survey forms were developed using multiple standardized measures for this study. Interviewers asked participants questions from the survey, and recorded responses. To help participants choose responses for Likert scale questions, response choices were provided on laminated cards with extra-large print font (i.e., 20 pt. Arial font).

At the within-level (i.e., at the individual- or resident-level), the primary independent variables for the study were the latent constructs *social networks* and *social capital*. A latent construct is a theoretical or abstract concept that is not directly observed but can be inferred from

multiple measured variables/indicators (Brown, 2006). Additionally, the independent variables/latent constructs, s*ocial support* and *social engagement,* were used to examine the potential indirect effects between social networks and social capital and the dependent variables. Two facets of health, *functional health and well-being* and *depression,* were the dependent variables/latent constructs for the study. At the between level (i.e., group- or nursing home-level), *culture change* and the *role of social work* were the independent variables, and the social integration and health latent constructs were the proposed dependent variables.

Social network characteristics (i.e., size, frequency of contact, proximity) were measured using the concentric circle (i.e., egocentric network) approach. Older adults were presented a set of three concentric circles with a small circle in the center with the word "you" written. Respondents were told that the three circles should be thought of as including people who are important in your life right now but who are not equally close. Interviewers then asked the respondents to, "Please name people you feel so close to that it is hard to imagine life without them," and such persons were entered in the innermost circle of the network diagram. In cases where older adults did not know or could not remember names, interviewers wrote down identifying information as recalled by the older adult (e.g., nurse, friend from church). For each person stated, interviewers asked follow-up questions: a) does he or she live or work within this nursing home?; b) if not, does he or she live within a 1-hour drive?; c) do you have contact, over the phone or in-person, with them at least once a week? The same procedures were followed for the middle circle, described as including "people you may not feel quite that close but who are still very important to you," and the outer circle including "people you haven't already mentioned, but who are close enough and important enough in your life that they should be placed in your personal network." Following the interview, interviewers calculated totals for:

size = number of total people (size); proximity-in = number of people within the nursing home; proximity-out = number of people within 1-hour drive; and frequency = number of people with at least once a week contact. This approach and these measures are well-established and heavily utilized in the literature (Antonucci & Akiyama, 1987; Ashida & Heaney, 2008) with various older adult populations. As previous research has shown the importance of within facility relationships for nursing home residents (Chou, Boldy, & Lee, 2002; McGilton & Boscart, 2007), the count of within facility network members was used to enhance the proximity measure for this population.

Social capital was measured using three indicators, social groups, norms of reciprocity, and trust, based on a study by Narayan and Cassidy (2001). For social groups, residents were asked: how many groups or organizations do you belong to? We encouraged them to name religious/professional/community groups, social clubs, resident groups, or just groups of people who they got together or corresponded with regularly. For norms of reciprocity, residents were asked one question about whether they think people mostly look out for themselves or try to be helpful and one question about whether they think people try to take advantage of others or be fair. Trust was assessed using ten Likert scale questions about how much they trust they had for different groups of people (e.g., people in your community, residents in the facility, staff in the facility, people in your family, local government, judges/police). Previous research has shown these measures to be largely stable and consistent across data sets and demonstrably reliable and valid, particularly for community-dwelling older adults (Norstrand & Xu, 2012). In this study, internal consistency for social capital was quite high ($\alpha = .79$).

Social support was measured using a modified version of the Krause and Markides (1990) version of the widely used Inventory of Socially Supportive Behaviors (ISSB) (Barrera,

Sandler, & Ramsay, 1981), which uses Likert scale questions to generate subscale scores for informational, tangible, emotional, and provided support. In previous research, reported internal consistency estimates ranged from 0.67 to 0.83 (Krause & Shaw, 2002). For this study, questions tailored to those only living in the community were eliminated, and facility-related examples were added. In this study, internal consistency for social support was high ($\alpha = .92$).

Social engagement was measured using Likert scale questions about participation in various social activities within and outside the nursing home. The questions tapped into whether or not residents participated as well as the frequency of participation. The questions were derived from previous work (e.g., Glass et al., 2006; Jang et al., 2004; Mitchell & Kemp, 2000) and tailored to include activities pertinent to nursing homes. Based on the literature (specifically this study's focus on civic engagement) and conversations with nursing home social services staff, three indicators (i.e., productive/civic, activity participation, and socializing), which assessed prevalence and importance of productive/civic engagement for older adults in nursing homes and differentiated between informal socializing (i.e., having conversations) versus participating in activities that involved mental stimulation and active involvement (e.g., playing a game, singing, doing art work). I screened the item responses to ensure they conformed to the expected pattern. Internal consistency for social engagement in this study was acceptable ($\alpha = .65$).

Depression was measured using the Geriatric Depression Scale (GDS) (Yesavage et al., 1983). The GDS is a 30-item questionnaire in which participants are asked to respond to yes/no questions about how they felt over the past week; this scale has shown to be highly internally consistent in both clinical practice and research ($\alpha = .87- .94$). This scale is recommended for use with the nursing home population (Mitchell, Bird, Rizzo, & Neader, 2010), particularly when

paired with cognitive screening techniques (McGivney, Mulvihill, & Taylor, 1994). Total scores on the GDS range from 0-30. Previous research, using confirmatory factor analysis, utilized six subscale scores for the GDS: dysphoric mood, withdrawal-apathy-vigor, hopelessness, worry/anxiety, memory/ concentration, and agitation (Adams, Matto, & Sanders, 2004). In this study, the six subscales were calculated for the mental health construct. Internal consistency for the total scale in this study was high ($\alpha = .86$).

To measure *functional health and well-being*, the SF-12v2® was used. This is a 12-item health survey with mostly Likert scale questions that asks respondents to answer the questions as they pertain to the way he or she felt or acted during the past 4 weeks. The survey asks questions across eight health domains: physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health. Scores across the eight health domains can be then used to generate scores for physical health and mental health (also referred to as the PCS and MCS) that are based on population norms (Ware, Kosinski, & Keller, 1996). The scale has been shown to be reliable and valid with older adults of all ages, including those in nursing homes (Jakobsson, 2006). However, it has been suggested in the literature (e.g., Cernin, Cresci, Jankowski, & Lichtenberg, 2010; Resnick & Nahm, 2001) that, for optimal measurement, the traditional scoring mechanisms that produce PCS and MCS scores developed by Maruish and Kosinsk (2009) may need to be modified, specifically for populations of older adults. Due to measurement issues for these variables as discussed on page 130 of Appendix C, this study utilized the suggested modified scales for the physical health and mental health indicators rather than the PCS and MCS scores. Internal consistency was acceptable for functional health and well-being in this study ($\alpha = .78$).

The covariates for the study included: *activities of daily living* (ADLs), *cognitive status*, and *socioeconomic status* (SES). The Katz Index of Independence in Activities of Daily Living was used to assess ADLs (Wallace & Shelkey, 2008). This scale has been used with the nursing home population and can be assessed using self-report. In previous research, the coefficients for internal consistency ranged from 0.94-0.97, and the scale alpha equaled 0.56 (Kane & Kane, 2003). In this study, internal consistency for ADLs was acceptable ($\alpha = .74$). Inclusion criteria, as previously discussed, eliminated those with moderate to severe cognitive impairments. However, to control for mild cognitive impairment, a simplified and non-invasive test called the 6 Item Cognitive Impairment Test (6CIT) was used. The 6CIT is a brief and simple test of cognition that has shown to outperform the Mini-Mental Status Exam for detecting differences in mild dementia (Brook & Bullock, 1999). In this study, the 6CIT had relatively low internal consistency reliability ($\alpha = .30$). Finally, years of education was collected as a proxy for socioeconomic status (SES), which is one of the most commonly used proxies for SES (Lee, Paultre, & Mosca, 2005). See Appendix A for questions included on the nursing home resident surveys. In addition to variables involved in testing the model, basic demographic information was collected for all resident participants, including gender, race/ethnicity, marital status, and nursing home payer source.

Administrators were asked to fill out the Kansas Culture Change Instrument (KCCI) Leader Version that was developed and validated by the University of Kansas School of Nursing for the Kansas Department on Aging (Bott et al., 2009). This tool includes Likert scale questions, and answers to the questions generate sub-scale scores for resident care, nursing home environment, relationships, staff empowerment, nursing home leadership, shared values, and quality improvement. Administrators were provided a stamped envelope, so they could mail

back the completed instruments. In this study, the culture change scale had high internal consistency reliability (α = .90). See Appendix B for a copy of the survey used for administrators.

In order to gather information about the role of social work in the nursing homes, I developed a brief survey for SSDs. This brief survey asked questions about the SSDs' experience, education, licensing, and job responsibilities as well as questions about the nursing home staff, including the number of staff members who worked in social services, the number of staff members with degrees in social work, and whether or not they had a social work consultant. After examining answers to the questions, I included measures for the number of social services staff members, the number of staff with social work degrees, and highest level of education of the social service director in the dataset; other measures did not include variation in responses.

Pilot Testing

To increase rater reliability, all interviewers took part in a training about the study and study procedures (i.e., recruitment, informed consent, interview protocol, payment processing). Prior to pilot testing, interviewers also practiced the interview protocol and met to discuss the questions and any issues that arose. Then, at the pilot site the three interviewers completed nine interviews with older adult nursing home residents using the structured questionnaire. We did this in order to ensure respondents were able to answer the questions without difficulty and to verify the length of the interviews. At the pilot site, twelve residents were approached by the SSD regarding study participation; 10 nursing home residents agreed to take part in the interviews, and one person did not finish the interview for health reasons.

Following the pilot test, all interviewers met to discuss each question and the overall process. Overall, the interviews provided meaningful information for each construct, and

responses to each question varied considerably. Further, we received positive feedback from the residents about the interviews, stating they thought the interview gathered important information across key components of their social worlds. The duration of each interview was approximately one hour, ranging from about 45-75 minutes. The timing of the interviews was determined to be on target, and none of the residents indicated fatigue with the length of the interviews. We made a number of minor revisions to the structured questionnaire following the pilot test, none of which changed the substance or meaning of any of the constructs or indicators. The changes included minor wording changes (e.g., 'in-person' instead of 'with you physically') and clarifications (i.e., added examples) for various questions to ensure interviewers answered questions from the respondents similarly.

Data Analysis Procedures

MSEM was used to analyze the data gathered in the study. Prior to conducting MSEM, a number of steps were performed, including extensive data assessment and cleaning (before and after data imputation), missing data analysis using multiple imputation, and assessment of the measurement model using multi-level confirmatory factor analysis (ML-CFA). This section details the data cleaning and missing data processes utilized in the study as well as a discussion of steps involved in utilizing MSEM. Appendix C includes additional methodological details.

Data Entry and Management

Surveys were coded using an identification number, and all identifying information was included in a separate file. All study materials were kept in a locked filing cabinet, and all electronic data sources only include the identification numbers. All findings are reported at aggregate levels and were reviewed carefully to maintain confidentiality of individual participants and nursing homes. *SPSS Statistics* version 20 and *Mplus* version 7 were used for

quantitative analyses. A trained research assistant and I entered each data file into SPSS, and every data file was audited by a third party for quality assurance. Resident-level data were entered, and as needed, variables were re-coded for scoring purposes.

Outliers are extreme values on one variable (univariate outlier) or abnormal combinations of scores on two or more variables (multivariate outlier), and outliers can distort statistics, lead to Type I or Type II errors, and limit generalizability of the data (Tabachnick & Fidell, 2007). In order to identify univariate outliers in this study, all data entry was double-checked and ranges of scores were examined prior to data imputation. Data were also examined for each nursing home, including means, standard deviations, and ranges of scores, to ensure plausible values indicated for each variable. No outliers were identified.

Once the resident-level data were verified and cleaned, variables for culture change and the role of social work were added to the dataset; there were no missing data for these variables. SPSS data files were converted to files appropriate for *Mplus*, a statistical package capable of completing data imputation for a two-level model. *Mplus* is designed for easy use by applied researchers and is flexible in handling complex survey data.

Missing Data Analysis

When using a planned missing data design, researchers are able to, in essence, control the missingness, thus producing data that can be considered either *missing completely at random* (MCAR) or *missing at random* (MAR). Though it is not possible to conclusively determine using statistical processes that missingness is MCAR, the assumption can be made that missing data is MAR (Gelman & Hill, 2007). Data that are considered MAR are recoverable through modern data imputation procedures, namely multiple imputation (MI) or full information maximum likelihood procedure (FIML) (Hofer & Hoffman, 2007).

This study used MI to impute missing data because it allows for item-level imputation, which ensures that scale scores can be calculated following imputation (Schafer & Graham, 2002) versus FIML that corrects for parameter estimates but does not fill in missing values. In this study, almost all items in the dataset were to be used to calculate scale scores. With MI, missing values are predicted from the observed values using a series of multiple regression equations. This means that missing values for each participant are predicted from his or her own observed values and that the amount of variability is preserved in the imputed data (Schafer & Graham, 2002). For MI in *Mplus*, multiple data sets are generated, and statistics are provided in which parameter estimates and standard errors are computed using the average over the set of analyses (Muthén & Muthén, 2010). Related to this, it is important to recognize that imputed values do not represent the score an individual would have given if he or she had taken the test. Rather, the imputed values are meant to recover the whole distribution of values (i.e., available data and missing data); therefore it is often necessary to impute impossible values in order to recover this distribution (Schafer & Graham, 2002).

In general, MI analysis includes three steps: imputation phase, analysis phase, and pooling phase. This study imputed data into 20 data sets because Enders (2010), citing a study by Graham, Olchowski, & Gilreath (2007), suggests imputing 20 data sets in order to improve statistical power and the validity of the multiparameter significant tests. The imputation phase of MI is a process by which missing data values are filled in to recreate the variance/covariance matrix (Enders, 2010). During the analysis phase, models are tested on all 20 imputed data sets, and during the pooling phase, a set of rules are used to combine the 20 sets of parameter estimates and standard errors into a single set of results (Enders, 2010). The analysis phase and

pooling phase are conducted simultaneously when using *Mplus,* therefore one set of statistics are produced.

Because this was a cross-sectional study, reference variables (i.e., core marker variables from every construct were included on each form) were used, which aided in the MI process (Dattalo, 2010). Further, categorical and ordinal variables were imputed as continuous variables. For example, answers to questions for the depression construct were coded in the dataset as 0 = no or 1 = yes. These were imputed as continuous variables, meaning that imputed scores could be, for example, 0.8 or 0.2. This was done because all of the variables were to be used to calculate interval-level scale scores to use in the analyses, and none of them were to be analyzed as binary variables (Graham, 2009), which also aided in the imputation process.

As anticipated, there were a total of 30.46% resident item-level missing data, 30.12% planned and only 0.30% unplanned. In conducting MI for this study, *Mplus* utilized two Markov Chain Monte Carlo chains and a fixed number of iterations of 10,000 to impute 20 copies of the data set, each with different estimates of the missing values. The imputation model included all variables (n = 130) relevant to testing the proposed MSEM models, with nursing home being the 'cluster' variable. Prior to data imputation, I conducted one-way random effects ANOVAs on each variable with nursing home as the random factor in order to determine which individual-level variables had significant between-level variance. These variables were then entered as both within-level and between-level variables. All other individual-level variables were included as within-level variables, and all nursing home-level variables were specified as between-level variables. As evidence of certainty regarding the predictability of the imputation process, the means and standard deviations of the observed and imputed values were highly correlated

(*M*s: $r = .994$, $p < .001$; *SD*s: $r = .978$, $p < .001$). Further, within-level and between-level covariance matrix values were relatively low (Enders, 2010). Following data imputation for data cleaning and data verification purposes, descriptive statistics were used to identify outliers, establish normality, and assess linearity, multicollinearity, and homoscedasticity prior to conducting CFA (Tabachnick & Fidell, 2007). Details of these data cleaning procedures are included in Appendix C.

Data Analysis

This study utilized structural equation modeling (SEM), specifically multilevel structural equation modeling (MSEM), to answer the research questions and test study hypotheses. SEM is a methodological technique for estimating and testing relationships between one or more independent variables and one or more dependent variables. The independent and dependent variables can be latent variables (i.e., constructs, factors) or measured variables. The goals of SEM are to understand the patterns of correlation/covariance among a set of variables and to explain as much of their variance as possible in the specific model (Kline, 2005). Further, SEM requires a priori theoretical specification and can be used to test complex models that include assessment of measurement structure and the testing of direct and indirect effects among variables. Additionally, one of the primary advantages of SEM over other traditional analyses (e.g., regression) is that models of expected relationships are corrected for measurement error (Brown, 2006; Little, in press). For these reasons, SEM was appropriate for testing the model based on social network theory as proposed in this study.

Additionally, the data for this study clearly have a hierarchical structure. That is, the individual residents are nested within nursing homes. This makes it reasonable to assume that the residents within one nursing home are more similar on key variables than residents from

different nursing homes. In this case, ignoring the hierarchical data structure would be inappropriate and potentially misleading when interpreting the results. Single-level analyses require researchers to assume that all observations are independent; however, this is rarely true, as individuals within similar units and organizations often share common characteristics and patterns (e.g., kids within schools) (Heck, 2001). Because of these similarities, it is important to conduct analyses that account for the between group influence. As discussed by Dedrick & Greenbaum (2011), single-level analyses operate "on a single covariance matrix that does not take into account the multiple levels and ignores the fact that the factor structure of an organizational measure and its psychometric properties (e.g., reliability) may not be the same at each level of analysis" (p. 3); this is known as atomistic fallacy. On the other hand, it would be also misleading to conduct analyses that only aggregate the data, that is develop mean scores on the variables for each nursing home, and ignore the individual-level variation (i.e., ecological fallacy) (Robinson, 1950).

Therefore, this study utilized MSEM because it was necessary to: a) examine relationships between latent constructs and measured variables (SEM), and b) assess the relationships of variables across multiple levels (multilevel analysis). The units of analysis were at both the individual-level (N = 140 residents) and group-level (N = 30 nursing homes). Conducting MSEM made it possible to estimate variance (explained and unexplained) and path coefficients among individuals within the sample (within-level) and among nursing homes (between-level).

As discussed by Heck (2001), fitting multilevel data structures with SEM can require multiple steps to work through prior to hypothesis testing: a) fitting single-level confirmatory factor analysis (CFA) model; b) examining the intraclass correlation coefficients to determine if

data should be examined at multiple levels; c) fitting the ML-CFA model to establish the measurement model. Throughout the process, examining various fit indices as well as parameter estimates is considered the best option for determining the adequacy of models and in interpreting model fit (Kline, 2005; Tabachnick & Fidell, 2007). In addition, when comparing nested models (i.e., models that are hierarchically related whereby one model is a subset of the other), the X^2 difference test can be used to determine whether or not modifications improved model fit. Also, with multilevel models, the ideal situation is to calculate fit statistics at both the within-level and between-level when evaluating model fit, as this helps in identifying which aspects of the model are causing misfit. However, I was unable to determine level-specific model fit for most of the fit indices due to sample size. Because the *Mplus* statistical package provides SRMR values at the within-level and the between-level in the output, in this study the SRMR is the only statistic that reliably reports level-specific model fit.

As stated by Brown (2006), "often a CFA model will need to be revised… to improve the fit of the model" (p. 157). In this study, I was able to determine acceptable model fit for the measurement model using established statistical techniques discussed in the literature. The main measurement modification made involved the social capital construct. Specifically, the parameter estimate for the social groups indicator of social capital was not significant and did not highly correlate with the other indicators (trust and norms of reciprocity). Therefore, I included social groups as an observed variable in the model rather than as an indicator of social capital (Brown, 2006). For a detailed description of CFA, fit statistics, and analytic processes for fitting the final measurement model, including literature supporting decisions made, see Appendix C.

The final ML-CFA model had overall acceptable fit based on $\chi 2/df$, RMSEA, and SRMR ($\chi 2$ = 332.85 *df =177*; $\chi 2/df$ = 1.881; CFI = .881; RMSEA = .079; SRMR-W = .062; SRMR-B =

.076). Considering the complexity of the model and its $\chi 2/df$, RMSEA, and SRMR scores, the final model appears to offer a reasonably close fit to the data. See Table 2 below for the relationships between indicators and their respective constructs. The amount of variance in each indicator that was accounted for by its latent construct ranged from 0.494 to 0.983. Some of these values are lower than the ideal standardized factor loadings of .70 or higher, but all values are higher the cut-off value of .30. Floyd and Widaman (1995) recommend removing indicators if the standardized factor loadings fall below .30. See Appendix D, Figure 8 for a pictorial representation of the final ML-CFA model for the data in this study.

Table 2. ML-CFA Model Loadings, Residual Variances, and R^2 Values

Constructs[d] and Indicators	Unstandardized Loading (SE)	Residual Variance	Standardized Loading (SE)[e]	R^2
WITHIN-LEVEL				
Social Network				
Size	0.158 (0.016)	0.012	0.822 (0.041)	0.675
Proximity	0.153 (0.012)	0.004	0.926 (0.024)	0.858
Frequency	0.128 (0.012)	0.005	0.883 (0.024)	0.780
Social Capital				
Reciprocity	0.131[a] (0.012)	0.055	0.494 (0.041)	0.244
Trust	0.131[a] (0.12)	0.007	0.846 (0.063)	0.716
Social Support				
Informational	0.144 (0.019)	0.039	0.594 (0.069)	0.354
Tangible	0.153 (0.021)	0.033	0.648 (0.064)	0.420
Emotional	0.213 (0.016)	0.005	0.945 (0.037)	0.893
Provided	0.132 (0.017)	0.024	0.654 (0.072)	0.429
Social Engagement				
Socializing	0.109 (0.022)	0.027	0.560 (0.102)	0.314
Activity Participation	0.149 (0.018)	0.010	0.834 (0.096)	0.696
Productive/Civic	0.101 (0.017)	0.033	0.489 (0.081)	0.240
Depression				
DysMood/W-A-V	0.202 (0.016)	0.010	0.905 (0.038)	0.820
Worry/Memory	0.134 (0.019)	0.028	0.640 (0.060)	0.452
Agit/Hopeless	0.218 (0.016)	0.019	0.861 (0.032)	0.742
Functional Health and Well-Being				
Physical Health	0.110[b] (0.009)	0.011	0.736 (0.052)	0.542
Mental Health	0.110[b] (0.009)	0.014	0.696 (0.042)	0.484
BETWEEN-LEVEL				
Social Network				
Size	0.054 (0.035)	0.00[c]	0.983 (0.023)	0.966
Proximity	0.052 (0.020)	0.00[c]	0.982 (0.014)	0.964
Frequency	0.024 (0.025)	0.00[c]	0.918 (0.165)	0.843
Social Support				
Informational	0.040 (0.018)	0.00[c]	0.970 (0.028)	0.940
Emotional	0.050 (0.022)	0.00[c]	0.981 (0.017)	0.962
Provided	0.036 (0.031)	0.00[c]	0.962 (0.061)	0.926

[a] Factor loadings were fixed to equality.
[b] Factor loadings were fixed to equality.
[c] Residual variances were fixed to 0.00.
[d] All latent variances were fixed to 1.0.
[e] All *t* values (parameter estimates divided by standard error) are significant at the .001 level.

Chapter 4: Results

In this section, descriptive statistics for the resident and nursing home participants are first presented. The final MSEM model used to answer the two research questions and test the four study hypotheses is then discussed and presented.

Sample Characteristics

Resident Descriptive Statistics

The final sample size for the study was 140 nursing home residents from 30 nursing homes in Northeast Kansas. Between 3-6 nursing home residents participated in the study from each nursing home. The overall consent rate for residents in the study was 75.7% (140/185). Of the 45 residents who did not participate in the study, 62.2% (n = 28) declined; 33.3% (n = 15) were unable to take part in the interview due to sickness, health concerns, or other scheduled appointments; and 4.4% (n = 2) started the interview but could not finish for health reasons. Anticipated recruitment rate for residents was 60-70% based on a study with a similar sample (Mahan, 2005). Across the 30 nursing homes, the consent rate for residents ranged from 50-100%. Generally a 50% response rate of individuals is considered representative of the group (Verran et al., 1995). The mean age for the entire sample was 83.07 (SD = 9.02). The sample was 74.3% female and 25.7% male. See Table 3 for a summary of basic descriptive information for the nursing home resident participants. Most participants identified as White (92.7%). Over half of participants were widowed (55%). Approximately one-third (37.1%) graduated high school. Most participants (61.4%) utilized Medicaid and other governmental funds to pay for the nursing home care, and 35% paid with private funds.

Table 3. Resident Participant Characteristics

	***N* = 140**
Age	
Mean	83.07
Standard Deviation	9.02
Range (years)	65-103
Sex	
Male	25.7%
Female	74.3%
Race/Ethnicity	
White/Caucasian	92.7%
African American	5.7%
Native American	0.7%
Hispanic	0.7%
Marital Status	
Married	15.0%
Single	30.0%
Widowed	55.0%
Level of Education	
Grades 0-8	10.7%
Grades 9-11	7.1%
High school graduate	37.1%
Some college or associate/technical degree	23.6%
Bachelor's degree	13.6%
Graduate degree or above	7.8%
Nursing Home Payment Method	
Medicaid	61.4%
Private Funds	35.0%

To provide context for the subsequent MSEM model results, Table 4 summarizes means, standard deviations, score ranges, and symmetry statistics for scale scores/indicators used in answering the study research questions, and all variables in this dataset were continuous. For the social network construct, the average network size for the residents was approximately 10 people, with about 7 network members living either in the facility or within one hour of the facility and about 5 people in whom they had contact with at least once a week. Related to social capital, residents were members of about one social group. The other reported indicators/scale

scores were determined using resident responses on mostly Likert scale questions. Reverse scoring was conducted on negatively phrased items. Most scale scores were calculated by summing items, with the exception of the activities of daily living and cognition scales that were calculated using developed scoring mechanisms (Wallace & Shelkey, 2008; Brooke & Bullock, 1999).

For comparison to other studies and clinical assessment purposes, the mean GDS score for this sample was 9.10, indicating average responses of normal to mild depression (scoring for scale: 0-9 = normal; 10-19 = mild depression; 20-30 = severe); this finding is similar to other older adult samples (Lopez, Quan, & Carvajal, 2010). For the SF12v2 scale, the average PCS score using the scoring mechanism was 35.53, and the average MCS score was 46.89. This can be compared to the general population normed average of 50.0 (PCS & MCS). The mean score (prior to re-coding) for the Katz ADL scale was 2.84, indicating high levels of assistance required to meet activities of daily living (scoring for scale: 0 = low, patient very dependent; 6 = high, patient very independent) (Wallace & Shelkey, 2008). The mean 6CIT score of 20.57 indicates an average response of mild cognitive impairment or normal functioning (0-18 = significant cognitive impairment; 19-20 = mild cognitive impairment; 21-28 = normal) (Brooke & Bullock, 1999).

Table 4. Descriptive Statistics of Study Indicators

Constructs	Indicators/ Scale Scores	Mean	*SD*	Range	Skewness	Kurtosis
Social Network	Size	10.236	6.172	0-30	.605	-.193
	Proximity	7.464	5.376	0-30	.830	.052
	Frequency	5.493	4.535	0-30	1.088	1.165
Social Capital	Norms of Reciprocity	4.366	1.653	0-6	-.559	-.066
	Trust	24.961	6.265	0-40	-.241	-.195
	Social Groups[2]	1.307	1.205	0-5	.657	-.316
Social Support	Informational	8.848	5.247	0-21	.120	-.520
	Tangible	6.41	2.864	0-12	.240	-.520
	Emotional	17.653	7.825	0-33	-.052	-.471
	Provided	12.308	7.096	0-33	.243	-.323
Social Engagement	Productive/Civic	4.454	3.151	0-15	-.017	-.396
	Socializing	9.052	2.960	0-15	-.648	-.017
	Activity Participation	14.009	5.390	0-30	-.032	-.453
Functional Health & Well-Being[1]	Physical Health	21.445	5.571	8-36	.280	-.285
	Mental Health	19.249	4.275	5-25	-.248	-.569
Mental Health[1]	Dysphoric Mood	6.816	2.401	0-9	-.945	-.233
	Withdrawal-Apathy-Vigor	3.251	1.990	0-6	-.225	-.569
	Worry/Anxiety	3.315	0.951	0-4	-.907	.725
	Memory/ Concentration	2.751	1.143	0-4	-.699	.460
	Hopelessness	2.952	1.345	0-4	-.560	-.316
	Agitation	1.826	1.070	0-3	-.287	-.816
Covariates	Activities of Daily Living[1]	3.166	1.843	0-6	-.039	-1.226
	Cognition[1]	20.570	6.028	0-28	-.409	-.602
	Level of education	12.864	3.073	0-21	-.218	1.707
Facility	Relationships	3.170	0.465	0-3	-.559	.407
Characteristics	Social Workers	1.279	1.292	0-5	.967	.768

[1]Scores were coded such that higher scores indicated better health outcomes (i.e., lower depression scores, higher functional health).
[2] This indicator was included as an observed variable in the model.

Nursing Home Descriptive Statistics

The overall nursing home consent rate for this study was 38.9% (47.4 % of larger facilities and 36.2% of smaller facilities). This response rate is similar to other studies that have

included nursing home samples (Simons & Jankowski, 2007). Of the nursing homes who declined participation, we never connected with 25.6% (n = 20) of administrators via phone or email, 7.7% (n = 6) lacked staff resources and time for participation, 3.8% (n = 3) were experiencing major facility and staff changes (e.g., renovations or administration changes) that kept them from participating, 3.8% (n = 3) did not have residents that met the study inclusion criteria (e.g., facilities specializing in dementia care, facilities only for short-term rehabilitation residents), and 2.6% (n = 2) stated that their corporate offices did not agree with participation. In five cases, administrators agreed to participate, but SSDs did not consent, thus the facility did not participate in the study. Descriptive statistics for nursing homes that participated in the study are delineated on Table 5 and Table 6.[2] As shown, the mean number of licensed beds (bed size) was 106.63, and ranged rather considerably from 46 to 269 beds. The average bed size in Kansas at the time was 81.78. The mean number of deficiencies for study participants was 12.5, whereas the average number in Kansas is 10.0 and in the United States is 7.5. Approximately 43% of the nursing homes that participated had above average or better Medicare Star Ratings. Star ratings are based on health inspection, staffing, and quality measures ratings. About 83% of nursing homes were in semi-urban or urban counties, though nursing homes from densely-settled rural and rural counties represented about 15% of the participants.

[2]Data on the nursing home characteristics came from the Adult Care Home Annual and Semi-Annual Reports available on the Kansas Department for Aging and Disability Services website and from the Center for Medicare and Medicaid Services website (http://www.medicare.gov/NursingHomeCompare/).

Table 5. Descriptive Statistics for Participating Nursing Homes (Continuous Variables)

	Mean	***SD***	**Range**
Bed Size	106.63	56.76	46-269
# Deficiencies	12.53	7.96	0-30
Occupancy Rate	87.33%	8.07	67.7%-100%
NF Payment Rate	$157.88	18.79	$134-$197
Private Pay Rate	$185.18	38.25	$130-$292
Medicaid Case Mix Index	0.99	0.07	.78-1.1

Table 6. Descriptive Statistics for Participating Nursing Homes (Categorical Variables)

	***N* = 30**
Status as a Continuing Care Retirement Community	
Yes	23.3%
No	76.7%
Chain Affiliation	
Yes	56.7%
No	43.3%
Ownership Type	
Profit	66.7%
Nonprofit or Government	33.3%
Accepts Medicaid Residents	
Yes	93.3%
No	6.7%
Medicare Star Rating (out of 5 stars)	
1 Far Below Average	13.3%
2 Below Average	30.0%
3 Average	13.3%
4 Above Average	30.0%
5 Much Above Average	13.3%
Geographic Location	
Rural	3.3%
Densely-Settled Rural	13.3%
Semi-Urban	3.3%
Urban	80.0%

A series of independent samples *t* tests and chi-square differences tests were conducted to assess if there were significant differences between participating nursing homes and non-

participating nursing homes from which the sample was drawn. Results indicated a significant group difference in whether or not the nursing home was affiliated with a chain organization and in occupancy rates between participating and non-participating nursing homes. Participating nursing homes (43.33%) were less likely than non-participating nursing homes (72.91%) to be a part of a chain ($X^2 = 6.83$, $p < .05$). Further, participating nursing homes ($M = 87.32$) had higher occupancy rates than non-participating facilities ($M = 79.67$) ($t = -3.11$, $p < .01$). Variables with non-significant results included: total number of licensed skilled nursing facility beds, number of health inspection deficiencies found at the last inspection, nursing facility payment rate, private pay rate, Medicaid case mix index, status as a continuing care retirement community, ownership type, status as a Medicaid participant, Medicare star rating, and geographic location. This sample is generally representative of the population of nursing homes included in this study, with the exception of chain membership and occupancy rate.

Finally, descriptive statistics for the administrators and SSDs who participated in the study are included on Table 7. As shown, 53.3% of administrators were female and primarily (93.3%) White/Caucasian, and 43.3% had either a bachelor's or master's degree. Nearly all (96.7%) SSDs were full-time employees, and 40% had worked at that particular nursing home for five or more years. The education of the SSDs varied, with 30% not having an undergraduate degree, about 43% having a bachelor's in social work (BSW) or master's in social work (MSW) degree, about 17% having another undergraduate degree, and 10% having a master's degree in gerontology.

Table 7. Descriptive Statistics for Administrators & Social Service Directors

	***N* = 30**
Administrator Gender	
Male	46.7%
Female	53.3%
Administrator Highest Degree	
High School	6.7%
Associate's Degree	3.3%
Bachelor's Degree	63.3%
Master's Degree	26.7%
Administrator Ethnicity	
White/Caucasian	93.3%
Hispanic	3.3%
Other/Unknown	3.3%
Social Service Director Full-Time Staff Status	
Yes	96.7%
No	3.3%
Social Service Director Length of Employment at Facility	
1 year or less	20.0%
2-5 years	33.3%
5 or more years	40.0%
Social Service Director Education	
No Undergraduate Degree	30.0%
BSW or MSW Degree	43.3%
Other Undergraduate Degree[1]	16.7%
Masters in Gerontology	10.0%

[1]Other reported degrees included: Philosophy, Psychology, Health Promotion, Ecology, and Sociology

Multilevel Structural Equation Model

The overall study was guided by two research questions and four hypotheses. The following section details the results of the MSEM models[3] used in this study. The structural equation models included the measurement model (i.e., ML-CFA final model), and socioeconomic status, cognitive status, and activities of daily living were included as covariates.

[3]The baseline model for the data, which constrained path coefficients for indicators of each latent construct to 1.0, latent variances to 0.0, and path coefficients to 1.0, did not fit the data ($\chi 2$ = 1395.688, *df = 212*; CFI = .097; RMSEA = .200; SRMR-W = .209; SRMR-B = .440).

Table 8 reports key findings for nested models and includes model fit statistics used to evaluate the best-fitting final model that answered research questions and tested study hypotheses.

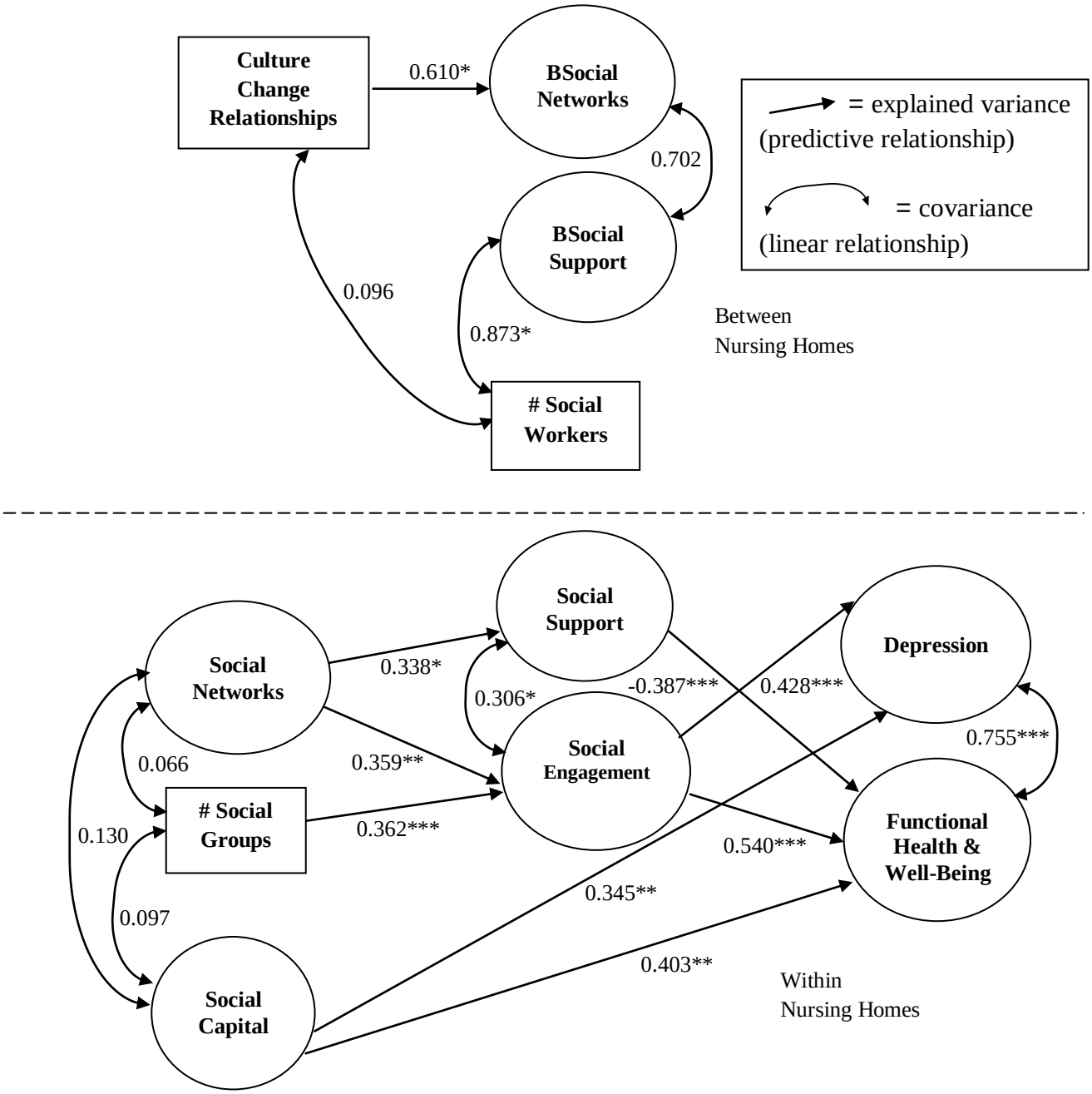
Table 8. Statistics for Comparison of Nested Models

Model	X^2	*df*	*p*	RMSEA	CFI	SRMR-W	SRMR-B	$\triangle X^2$	$\triangle df$	*p*
Measurement Model	332.850	177	<.01	.079	.881	.062	.076			
Hypothesized Model	360.864	185	<.01	.082	.864	.073	.076	28.01	8	<.01
Final Model	343.194	186	<.01	.078	.848	.065	.075	17.7	1	<.01

A test of the hypothesized model indicated somewhat acceptable model fit ($\chi 2$ = 360.864, *df = 185, p* < .01; $\chi 2/df$ = 1.95; CFI = .864; RMSEA = .082; SRMR-W = .073; SRMR-B = .076). Examination of parameter estimates indicated that some of the predicted paths were non-significant[4]. Non-significant predicted pathways were removed one at a time, and direct pathways between social capital and functional health and well-being and depression were included. The final model included only significant pathways for predictive relationships, though non-significant correlations between latent constructs/observed variables were retained to provide less biased estimates of the predicted paths. Results from the final model are shown below in Figure 7. Overall, the final model showed acceptable fit ($\chi 2$ = 343.194, *df* = 186, *p* < .01; $\chi 2/df$ = 1.845; RMSEA = .078; CFI = .880; TLI = .848; SRMR-W = .065; SRMR-B = .075). See Appendix D for the within-level and between-level models' covariance matrices and corresponding means and standard deviations (Table 12 and Table 13).

[4]These included: social capital and social support; social capital and social engagement; # social groups and social support; and social support and depression

Figure 7. Final MSEM Regression Model



Note: All parameter estimates are standardized. Controlling for variables in SEM require direct paths (not shown) from control measures to latent constructs/observed variables in the model.
* p<.05 ** p<.01 ** p<.001

Hypothesis Testing

The first question was: among older adults in nursing homes, do the data support the proposed model based on social network theory? Hypothesis 1.1 was that there is an indirect relationship between social networks and functional health and well-being and depression through social support and social engagement. Hypothesis 1.2 was that the unique effects of social capital in addition to the unique effects of social networks would significantly predict variance in health outcomes. The *Within Nursing Homes* model in Figure 7 above shows results that answered this question.

As shown, the model showed a predictive relationship between social networks and functional health and well-being indirectly through social support and social engagement. Importantly, social engagement had a positive relationship with functional health and well-being. However, contrary to the hypothesis, results indicated an inverse relationship between social support and functional health and well-being. The model also indicated a positive predictive relationship between social networks and depression indirectly through social engagement; however, social support did not have a significant relationship with depression. Therefore, Hypothesis 1.1 is partially supported.

Regarding the social capital construct and the number of social groups, the final model showed a positive predictive relationship between social capital and functional health and well-being and depression and an indirect positive predictive relationship between the number of social groups and functional health and well-being and depression through social engagement. Therefore, Hypothesis 1.2 is partially supported. To further verify these findings, I ran a model without the social capital construct and the observed variable for number of social groups. This model did not fit the data ($\chi 2$ = 293.386, *df =141,* $\chi 2/df$ = 2.081; CFI = .875; RMSEA = .088;

SRMR-W = .103; SRMR-B = .253) and predicted less of the variance in depression (30.9%) and in functional health and well-being (39.3%) than the model that included social capital.

In conclusion, social engagement, indirectly through social networks and social groups, had the highest unique effect on depression (standardized coefficient = 0.428, $p < .001$) and functional health and well-being (standardized coefficient = 0.54, $p < .001$). Social support, indirectly through social networks, had a negative unique effect on functional health and well-being (standardized coefficient = -0.387, $p < .001$) and did not have a significant relationship with depression. Social capital had a significant direct unique effect on depression (standardized coefficient = 0.345, $p < .01$) and functional health and well-being (standardized coefficient = 0.403, $p < .01$). The final model explained 45.7% of the variance in depression and 56.4% of the variance in functional health and well-being. See Table 9 for details on standardized parameter estimates from the final MSEM model.

Table 9. Standardized Parameter Estimates from Final MSEM Model

Endogenous Variable Regressed on	***B***	***SE(B)***	***T***	***p* value**
Support on				
Networks	0.338	0.107	3.176	0.001
Engagement on				
Networks	0.359	0.113	3.177	0.001
Engagement on				
Groups	0.362	0.077	4.688	0.000
Depression on				
Engagement	0.428	0.105	4.091	0.000
Capital	0.345	0.105	3.273	0.001
Functional Health on				
Support	-0.387	0.096	-4.012	0.000
Engagement	0.540	0.100	5.396	0.000
Capital	0.403	0.118	3.415	0.001
Between Networks on Relationships	0.610	0.299	2.041	0.041

Table 14 in Appendix D includes the parameter estimates for activities of daily living, cognitive status, and socioeconomic status that were controlled for in the model. As shown, the influence of the covariates on each of the social integration constructs was non-significant, thus activities of daily living, cognitive status, and socioeconomic status did not explain a significant amount of the variance in these constructs. However, the activities of daily living and cognitive status did have predictive relationships with depression and functional health/well-being (*p's* < .05). Therefore, activities of daily living and cognitive status do explain a fair amount of the variance in depression and functional health and well-being, with the standardized parameter estimates ranging from .19 to .27, though importantly were not higher predictors of functional health and depression than social capital, social engagement, or social support.

The second research question was: what influences do facility characteristics have on social integration for older adults living in nursing homes? The hypotheses for this question were that having more staff with degrees in social work (Hypothesis 2.1) and having greater involvement in culture change activities (Hypothesis 2.2) would have predictive relationships with between nursing home social integration constructs.

As shown in the *Between Nursing Homes* model in Figure 7 above, the number of social workers was significantly positively associated with social support (standardized estimate = 0.873, $p < .05$), but it was not a predictive relationship. Therefore, Hypothesis 2.1 is partially supported. The culture change relationships sub-scale had a positive predictive relationship with social networks (standardized estimate = 0.61, $p < .05$) (see Table 9 above). Hypothesis 2.2 is supported. The final model explained 37.4% of the variance in social networks between nursing homes. Table 10 below delineates hypotheses and key study findings.

Table 10. Hypotheses & Key Study Findings

Hypothesis	Supported?	Key Finding
1.1	Partially supported	• Social networks had a positive predictive relationship with functional health and depression primarily via social engagement.
1.2	Partially supported	• Social capital had a positive predictive relationship with functional health and depression. • Social groups had an indirect positive relationship with functional health and depression via social engagement.
2.1	Partially Supported	• The number of social workers was associated with social support between nursing homes.
2.2	Supported	• The culture change relationships sub-scale had a positive predictive relationship with social networks between nursing homes.

Chapter 5: Discussion

Summary of Findings

This study advances social work theory and research at multiple levels to aid in improving health and well-being for older adults utilizing long term care services in nursing homes. Using multilevel structural equation modeling, this study tested and expanded upon social network theory, which previously had not been tested for older adults in nursing homes. Testing this model involved the assessment of multiple constructs of social integration. This expands the literature by helping to differentiate these variables and determine aspects of social integration that have the greatest influence on functional health and depression for older adults in nursing homes. Lastly, this study advances literature on the role of social work in nursing homes and on the influence of the culture change movement for nursing home residents.

The first hypothesis for research question 1 was that there is an indirect relationship between social networks and health (i.e., functional health/well-being and depression) through social support and social engagement. This hypothesis was partially supported. Findings did show that engagement in productive, meaningful, and social activities has the greatest influence on health (both functional health and depression) for older adults in nursing homes. In examining the social engagement construct, social engagement explained the greatest amount of variance in participating in activities (69.4%) compared to 30.6% of the variance in socializing, and 23.7% of the variance in productive/civic activities. Comrey and Lee (1992) suggest interpreting indicators such that more than 50% overlapping variance is considered excellent, 40% very good, 30% good, 20% fair, and 10% poor. While productive/civic engagement was not the highest in explained variance, it was above the cut-off value for removal as an indicator and was significant. These findings are particularly important in considering engagement

strategies that nursing home staff, family, and community groups could utilize to improve health outcomes for those living in nursing homes as well as how to target future intervention work aimed at increasing social engagement among residents.

A stronger association between health (i.e., functional health/well-being and depression) and social engagement, as compared to social support, indicates the importance of understanding why social support is shown to have little influence or even a negative influence on health outcomes. Studies have examined the potential harmful psychological effects of negative interactions with others (Lincoln, 2000), and it has been suggested (e.g., House, 2001) that future work is needed to understand how negative exchanges influence physical health outcomes. In this study, a number of residents who reported high scores in social support did discuss family members or situations that seemed to cause them distress (e.g., divorce, mental illness, job loss, legal troubles). Therefore, it is plausible that residents reported network members who provided them social support but that these individuals may have also been a source of stress and unease over the long-term, which may have influenced residents' current functional health or level of depression. As another interpretation, the findings related to social support in this study are similar to a previous study that interpreted the finding to indicate "that well-intended social support may negatively affect older adults' well-being if excessive instrumental support [tangible support] is provided and undermines older adults' confidence to remain independent" (Ashida & Heaney, 2008, p. 874). Furthermore, it is substantively probable that network members of those with higher levels of functional impairments tend to provide higher levels of social support. Clearly, further research is needed to understand these possibilities.

Overall, rather than interpreting the findings of this study to state that social support provided by networks actually has a negative influence on the lives of nursing home residents, it

is important to analyze the specifics of social interactions in more depth. Future work is needed to understand this study's findings, possibly further quantitative research using different measures for social support and qualitative methods to interview older adults. This would help gather in-depth information about the types of social support that are most influential and possibly identify concrete examples to share with network members to help them better provide support, which may actually be providing less instrumental support, and instead focus their energies on engagement activities.

The second hypothesis for research question 1 was that the unique effects of social capital in addition to the unique effects of social networks will significantly predict variance in health outcomes. In the final model, the hypothesis was partially supported. The findings showed a direct relationship between social capital and both health constructs and an indirect relationship between social groups and health via social engagement. In examining the social capital construct, social capital explained 69.9% of the variance in trust and explained 24% of the variance in norms of reciprocity. Therefore, this finding indicates that building trust among residents, staff, and even the greater community may help to ensure functional and mental health does not decline for older adults living in nursing homes. Furthermore, in verifying the measurement model, it was necessary to separate out social groups from the trust and norms of reciprocity indicators; this suggests that further work is needed to identify better measures for assessing social capital for older adults. Importantly, the finding related to social groups does provide valuable information for potential social work interventions that could utilize community groups, such as churches, service organizations, or work-related organizations, to help improve social engagement among residents.

The first hypothesis for research question 2 was that the role of social work would influence social integration for residents at the between-level. The study found that the role of social work is associated with group level variance in social support. However, findings did not show a predictive relationship; this was perhaps due to sample size issues and/or difficulties in assessing the role of social work through quantitative measures. Substantively, it does make sense that residents in nursing homes with social workers note higher levels of social support, considering the education, training, and licensing requirements of the profession. In understanding this finding as it relates to the finding for the within-level model that social support does not positively influence health, it is possible that social workers and other social services staff members provide needed social support for residents in nursing homes. Therefore, network members, such as family and friends, could spend less of their time on social support and more on engagement activities; future work is needed to understand if this is the case. Regarding measurement issues, this study used a measure of the count of social workers, which is not ideal. The range of scores for this measure was 0-5, but most nursing homes noted either zero or one social worker (M = 1.2). Future studies might work to identify better measures for understanding the impact of social workers on resident outcomes, such as pre- and post-tests at nursing homes that go from not having a social worker on staff to having one. Further, studies could assess the influence of having both degreed social workers and other paraprofessional social service staff, as this has been recognized as a best practice for providing psychosocial care in nursing homes (Simons et al., 2012).

The second hypothesis for research question 2 was that nursing homes' involvement in culture change would influence social integration for residents at the between-level. Findings showed that the relationships sub-scale for culture change involvement had a predictive

relationship with group level variance in residents' social networks. Substantively, this finding indicates that if nursing homes dedicate time and energy to ensuring that close relationships exist between residents, family members, staff and community, nursing homes residents can be expected to report greater levels of social networks. As a reminder, the social networks construct included indicators for number of people in residents' social networks, number of people who live or work in the nursing home or live within one hour of the nursing home, and the number of people the residents' have contact with at least once a week. Because many nursing homes are resistant to culture change activities due to time and resource barriers, it is important to identify particular aspects or components of culture change that have the most potential impact. This finding provides justification to nursing homes to expend time and resources towards relationship-building among residents, staff, family, and community members.

Study Limitations

There are a number of recognized limitations in this study. First, this was cross-sectional data, so therefore I was not able to assess differences over time or establish causal relationships between social integration and health. Importantly, this study was informed by a strong evidence base including social network theory (Berkman et al., 200) and substantial literature showing the influence of social integration on health outcomes. Having said that, the reality of the current methodological design is that is it not possible to definitively state that, for example, more social engagement *leads* to better physical and mental health outcomes. Longitudinal research is needed to establish potential causal relationships. In addition, longitudinal studies could work to understand how social integration changes over time, particularly when experiencing significant life changes (e.g., death of a loved one, starting a group exercise program, moving to a LTC setting) and the potential impacts of these changes on health. Furthermore, longitudinal work

could aid in establishing if specific aspects of social integration (e.g., having lunch with a close friend each week, talking with a daughter on the phone every day) are maximally beneficial overtime, and how potential changes in social integration at different ages and physical conditions impact depression and functional health and wellbeing over the long term.

In addition, a limitation of this research is that it did not test the influence of functional health and depression *on* social integration. In order to test these relationships, again longitudinal work would be needed to better understand how individuals' health impacts levels of social participation. In particular, it would be interesting to study the social integration outcomes for older adults as they were transitioning from an active, healthy state to one where they experienced declines in functional health or depression, and then to make comparisons between individuals who maintained integration and those who did not. In this study, it is important to note that some of the more engaged residents were those with quite significant physical impairments, and this is reflected in the data indicating that activities of daily living did not significantly influence the social integration constructs. As examples, one woman who could not walk would volunteer by sitting with other residents who were sick or dying, and another woman with very significant physical impairments had developed a phone service whereby she called people each morning to wake them up. These individuals may have had their physical disabilities for quite some time and thus were more adaptive and resilient, or it could be that they had network members or staff members who helped to empower them to be active and engaged. Regardless, as more people live longer, including those with physical and mental health difficulties, it is important that continued work examines the complex nature of the relationships between social integration and health, as this will help to improve outcomes overall.

Regarding validity and reliability, there are a few items to note. A strength of the study was that there were multiple interviewers who conducted the resident interviews, and all interviewers received training, practiced the interviews prior to conducting the study, and discussed questions and strategies for potential follow-up questions. However, the study did not assess inter-rater reliability. Further, the validity threat of social desirability bias is present for residents and administrators. The data collection for this study involved self-report from the residents, which is considered the gold standard. However, this does provide limitations because research has shown that older adults tend to focus on positive information as a mechanism for regulating their emotional experience; this is referred to as "positivity bias" (Hooyman & Kiyak, 2011). Therefore, when answering questions, it is possible that older adults reported higher levels of support, engagement, and health than actual reality. Further, because interviewers did not have previous relationships with the residents, it is possible that residents did not feel comfortable informing the interviewers, for example of sad feelings they were experiencing or a lack of support they received from family members. On the other hand, this could be viewed as a strength of the study because some of the residents may have actually felt more comfortable talking about some of these issues with the interviewers because they knew the information was confidential and that interviewers would not be communicating with staff or family members. Related to nursing home-level information gathered in the study, administrators may have had a tendency to report higher levels of culture change involvement than actual reality due to current recognition of culture change as a best practice.

Regarding sampling, the study sample was limited to Kansas, so this does limit the generalizability for the resident and the nursing home samples. However, every attempt was made to ensure random sampling at both the nursing home-level and the resident-level, so

certainly some strong comparisons can be made to other areas that have similar geographic or population characteristics.

As previously discussed, the nursing home sample was generally representative of the population of nursing homes included in this study; however, there were two exceptions, chain membership and occupancy rate. As a probable explanation for the differences, there are additional levels of command in nursing homes with chain affiliation, and in this study when we spoke with administrators from these nursing homes, they often told us they needed to contact the national office to get permission to participate. Many of these situations resulted in never hearing from the administrator again. As a possible explaining for the differences in occupancy rates, research has shown that there is higher staff turnover in facilities with lower occupancy (Harrington & Swan, 2003). In this study, nursing homes had a difficult time considering participation when they were experiencing administrator or SSD staff turnover or when administrators or SSDs were new to their jobs. As an example, two nursing homes initially agreed to participate in the study; however, by the time interviewers called to follow-up, a new administrator or SSD had started who had no information that the previous staff person in their position had agreed to participation. Both of these situations led to non-participation, as the new staff members stated that they had not developed relationships with the residents or were not yet comfortable with their jobs such that they felt comfortable signing up for the study.

Related to the older adult sample, it is recognized that this sample included older adults with relatively high cognitive functioning, which is potentially only 25% of older adults in nursing homes. This level of cognitive functioning was needed in order to ensure older adults could answer the questions, but this does provide limitations. Future work should be completed

to better understand relationships between social integration and health for older adults who have moderate to severe cognitive impairments.

Regarding the analysis, though the sample sizes were rather substantial considering the data collection efforts and time frame of the study, the reality is that for advanced statistical analysis, like multi-level structural equation modeling, there were limitations to what could be determined from the data, particularly for between-level testing. Finally, I was unable to control for socioeconomic status on all constructs due to potential linear dependency issues (see pages 18-19 in Appendix C for details). Therefore, this finding suggests that future work is needed to better understand the influence of socioeconomic status on various aspects of social integration for older adults living in nursing homes, as this may be a targeting factor for intervention work.

Study Implications

Overall, findings from this study lead me to suggest the need for a paradigm shift related to how community members and more broadly, society, thinks about and interacts with older adults living in nursing homes in the United States. Based on nursing homes' close connection to hospitals and society's view of aging as a disease and of people with disabilities as incapable, a paradigm shift is needed whereby community members reject the idea that nursing homes are medical institutions where residents are waiting to die, and instead, see residents as individuals capable of growth and with resources and experiences that, in spite of their disabilities or declining health, could be continuously utilized to contribute to overall systems growth.

Historically and politically, the development and utilization of nursing homes has many parallels with hospitals. Therefore, it is not surprising that visiting someone in a nursing home often looks similar to visiting someone at a hospital, as researchers (e.g., Malench, 2004) have shown that that nursing home visitors often bring flowers or other gifts, ask about the latest

doctor's visit or procedure, and/or cordially correspond with staff. However, the reality, which has been recognized by the culture change movement, is that the nursing home is ***home*** to over 1.5 million individuals. Visiting someone at a nursing home could more appropriately be viewed similar to visiting a family member or friend at their private residence, whereby individuals get together to have an enjoyable time in which they may have dinner, play games, share stories, or watch a sporting event. Taking this a step further, because of societal stereotypes many people and even residents themselves view those who are older and have disabilities as being only *in need* of help and support, however, the reality is that older adults in nursing homes should be valued for who they are and what they can contribute. As such, volunteer organizations could actually reach out to nursing homes as a source of volunteers rather than just a place that needs volunteers. For example, with more online and telephone support interventions, nursing home residents could call community-dwelling older adults to check on them, offer support, and discuss current events.

However, this kind of shift requires multi-systems, interdisciplinary change that includes further research, in-depth analysis of policies, and examination of practice. In working toward this paradigm shift, this study has a number of implications for research, policy, and practice that, if taken together, have the potential to contribute to a shift in views of nursing homes and those who live there in the United States.

Implications for Research

This study contributes to long term care research literature by testing the Berkman et al. (2000) framework for social network theory among older adults (e.g., Ashida & Heaney, 2008; Fraser & Rodgers, 2009), extending this work to include older adults living in nursing homes. Future studies could compare and contrast findings of these studies in an effort to understand

differences between population groups, for example community-dwelling older adults versus those living in nursing homes, and to determine additional variables (e.g., social capital) that could be added to the framework to better predict health outcomes.

This study also makes an important contribution to measurement literature of the various *social* variables. By testing multiple constructs of social integration (i.e., social networks, social capital, social support, and social engagement) with multiple indicators for each construct in one study, rather than focusing on one construct or even one indicator of a construct, my work helps to distinguish these variables from one another. This helps to eliminate confusion in the literature about how to operationally define the variables and to establish consistency in how various researchers define and measure these variables. Further work is also needed to identify better measures for social engagement and social capital and in general to identify the best measures for assessing social integration.

Assessing multiple aspects of social integration is also important because for all older adults, particularly those in nursing homes, it is necessary to account for individual variation and experience. For example, some older adults have multiple family members who are available on a daily basis and visit regularly, others may have one friend from church who stops by once a week to play a game of cards, and some may prefer being alone but find they enjoy the daily encounters with staff in whom they trust. In all of these examples, the older adults may be socially integrated, but without testing multiple aspects of social integration, one might have greater tendency to state older adults are isolated when they are not. Future research could analyze data using data techniques, such as latent class analysis, to establish potential groups of residents to target for interventions based on assessment of multiple aspects of social integration.

Finally, related to the design and analysis, this study demonstrates that a planned missing

data design coupled with the testing of a multilevel structural equation model can work and with relatively small sample sizes. Though there were limitations, as discussed above, the findings did provide valuable insights into individual-level as well as nursing home-level differences.

Implications for Social Policy

As Medicare and Medicaid are the primary sources of health care and long term care funding for older adults in the United States, findings from this study inform nursing homes' efforts to comply with these program's requirements. Study findings also inform current initiatives to improve care and reduce costs to the programs.

Related to compliance, there are a number of quality measures whereby nursing homes are assessed during their state survey process in order to receive CMS funding. Two specific quality measures relate directly to this study's health variables: a) how many residents exhibit depressive symptoms? and b) whether the number of residents who need help with daily activities has increased? In addition, related to nursing home expectations for providing psychosocial care, the CMS state operations manual for provider certification states that nursing homes "must provide for an ongoing program of activities designed to meet, in accordance with the comprehensive assessment, the interests and the physical, mental, and psychosocial well-being of each resident." (CMS, 2011, para 7). Even for those residents who will not or cannot plan their own activity pursuits, nursing homes are required to provide one-to-one programming, such that each resident has a specialized program that meets their needs.

Based on this study's findings in relation these CMS expectations, it is recommended that nursing homes identify and encourage meaningful social engagement for each resident that utilizes each individual's social networks and community groups and that is tailored to each individual's strengths and interests. In addition, based on the finding that social capital had a

direct influence on health outcomes, it is also suggested that nursing homes work to build trust, an important component of social capital, among residents and staff at the nursing home. When asking trust-related questions in this study, a number of participants with low mental health scores told disheartening stories of having roommates or staff members in whom they did not trust due to previous instances of theft, negative encounters, or neglect (e.g., staff members answering call lights by shutting them off but not actually assisting the resident to the bathroom). Therefore, building trust is one mechanism that could contribute to better outcomes in health and well-being.

To implement these suggestions, nursing homes could ensure that policies and/or structures within the organization encourage and incentivize staff members to engage in efforts to identify social engagement activities for each resident and to build trust among residents, staff, and other community members. This could be accomplished through additional trainings, intervention implementation, and/or the identification of strategies to reduce the amount of time required completing paperwork to ensure compliance with CMS requirements. For example, as found in a recent study (Simons et al., 2012), the workload of social services staff in nursing homes often emphasizes clerical and administrative tasks or tasks that no one else wants to do (e.g., moving furniture, tracking "lost and found" items). Public policies should also be examined to ensure nursing homes staff members, specifically social service and activities staff, have the resources and time to fully meet the expectations of the requirements for providing high quality psychosocial care. Future research and policy change is needed to build upon Simons et al. (2012) proposal for enhancing the quality of psychosocial care in nursing homes. In addition, research is needed to understand the role of activity staff in nursing homes, particularly in conjunction with social services staff.

Affordable Care Act initiatives are focusing efforts on developing and implementing interventions to improve care and reduce costs for the nearly 8 million Americans who are dually-eligible for Medicare and Medicaid; this population is more likely to utilize health and LTC services than other beneficiaries. As such, dual-eligibles account for 15 percent of total Medicaid enrollees yet represent 39 percent of annual Medicaid spending. In implementing ACA related to these goals, suggestions include engaging dual-eligibles and their families in program design and establishing a culture of quality improvement (Davenport, Hodin, & Feder, 2010) in an effort to better coordinate care. This study contributes to the work of Jacobson, Neuman, and Damico (2010) who raised awareness of the importance of including Medicare beneficiaries living in long term care settings in interventions working toward reducing costs, improving care management, and improving quality of life.

Findings from this study also inform culture change initiatives at both the federal and state-level. Specifically, the study finding that relationship-building among staff, family, residents, and the community has a predictive relationship with residents' social networks indicates that nursing homes who dedicate efforts towards relationship-building can potentially produce meaningful differences across nursing homes. Culture change efforts could focus on relationship building between staff, family, and residents as a starting point for those initiating culture change efforts or as a particular component to ensure focus for those in later stages of culture change implementation. Of course other aspects of culture change are also important, but relationship building, in particular, should be at the forefront of quality improvement efforts, as this study indicates that doing so may influence residents' social networks, with the potential to impact depression and functional well-being. Future work is needed to examine culture change in nursing homes that are more resistant to culture change compared to nursing homes that

embrace culture change but continue to have the same building structure as traditional nursing homes. Administrators, staff, and residents at both types of nursing homes could be interviewed qualitatively to gather in-depth information about barriers, successful strategies, and efforts that produce meaningful changes in residents' outcomes.

Healthy People 2020 is a federal government initiative that created a 10-year agenda with targeted objectives for improving health in the United States. One of the four overarching goals of this initiative is to "create social and physical environments that promote good health for all" people. Related to this for older adults, community interventions for changing physical activity by building, strengthening, and maintaining social networks are encouraged (e.g., setting up a buddy system, making contacts with others to complete specified levels of physical activity, setting up walking groups or other groups to provide friendship and support) (U.S. Department of Health & Human Services, 2013). Based on this study's findings, these interventions could include those in nursing homes, though they may have to modify physical expectations or expected outcomes. In addition, some of the measurable objectives for older adults (e.g., reduce the proportion of older adults who have moderate to severe functional limitations, increase the proportion of older adults with reduced physical or cognitive function who engage in light, moderate, or vigorous leisure-time activities). Older adults in nursing homes are not excluded from these goals; therefore, efforts should be made to ensure inclusion of those in nursing homes in efforts to meet these objectives.

Implications for Social Work Practice

This study has implications for social workers and other social service staff working with older adults in long term care settings. Related to having degreed social workers on staff at nursing homes, this study identified that the number of social workers played a role in reported

levels of social support at the group-level. This study shows that residents from nursing homes that have degreed social workers reported greater levels of social support. This supports findings from previous studies (Simons et al., 2012) stating that nursing homes with social workers have the capacity to provide better psychosocial care. It is, however, important to note that this study did not establish a predictive relationship between the role of social work and social support. Further quantitative work is needed that tests the influence of social workers on resident-level social integration outcomes, and qualitative work is also needed to better understand the impact of social workers, possibly from the perspectives of residents and their families.

Related to practice with older adults in nursing homes, residents are at particularly high risk for depression, with some studies finding that 16% of residents met criteria for major depressive disorder and another 16% with significant depressive symptoms (Zarit and Zarit, 2007). Furthermore, Malench (2004) conducted a study about activities performed by family members of those in nursing homes. The most common activity reported was bringing gifts, and importantly, facilities with social workers were more likely to offer family supports and to distribute newsletters indicating facility events in order to encourage family participation. As the present study shows, social networks and social groups, indirectly through social engagement, influence depression and functional health and well-being. Therefore, social workers could aid family and friends of those in nursing homes in identifying, engaging, and facilitating resident involvement in meaningful activities. For example, well-intentioned families may have a tendency to visit their loved one and spend time asking questions about a recent or an upcoming doctor's visit or providing financial advice. However, the reality is that actually playing a game or attending a church service together may produce better mental and physical health outcomes for their loved ones and would therefore be a better way to spend time. Social workers could

help to facilitate the identification of goals and increased engagement between residents and families.

Furthermore, rather than relying solely on family and friends, social workers could work to increasingly utilize community groups to engage older adults, particularly those organizations that residents are members of or were once active participants. As identified in previous work (Leedahl, Koenig, & Ekerdt, 2011), community organizations, like the Veterans of Foreign Wars (VFW), provide older adults sources of social engagement; however, this has traditionally been mostly accessible to older adults living in the community. Some members of these community organizations might volunteer in nursing homes, assist with activities, and/or develop close friendships with residents if such activities were encouraged by the organization. However, the literature does not currently include suggested strategies for ensuring engagement of residents in these organizations. Future research is needed to gather qualitative information on successful engagement strategies for older adults in long term care settings that utilize family, friends, and community groups. This could be done as a first step in an effort to widely disseminate best practice strategies to community members.

Prior work has shown that older adults living in nursing homes have higher levels of loneliness than community-dwelling older adults (Pinquart & Sorensen, 2001). However, most of the evidenced-based practices for reducing loneliness, social isolation and depression have mostly focused on community-dwelling older adults who receive long term care services (e.g., Chapin et al., 2013; Keller et al., 1988; Morrow-Howell et al., 2003). Therefore, findings of this study suggest that current intervention work could inform or could be expanded upon to include those in nursing homes. For example, Dabelko-Schoeny, Anderson, and Spinks (2010) piloted an intervention for older adults with functional limitations who were participating in an adult day

health program. The intervention consisted of three components: a) education about the community group that needs assistance; b) service work in which older adults assembled care packages for the community group and facilitators would spur discussion about the importance of the work; c) recognition where older adults would present the care packages to the community group and receive a certificate for their work. The study found that the intervention did produce gains in purpose in life, self-esteem, and perceived physical health, though the gains were not statistically significant. Based on their experiences, they provide a number of suggestions that pertain to next steps for this study, including using the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) model for planning and developing interventions, engaging older adult participants in determining the nature of the civic engagement activities, and examining multiactivity versus single activity interventions

The importance of this work is also underscored by findings of a recent large-scale study commissioned by CMS in which 160 residents in 40 nursing homes were interviewed about quality of life issues (Allen, 2011). Residents listed "choice of activities" and "activities that amount to something," such as activities that produce or teach something; activities using skills from residents' former work; religious activities; and activities that contribute to the nursing home, as priorities for ensuring dignity. Interestingly, residents rarely mentioned participating in activities as a way to just 'keep busy' or just to socialize, stating instead that they "wanted a variety of activities, including those that are not childish, require thinking (such as word games), are gender-specific, produce something useful, relate to previous work of residents, allow for socializing with visitors and participating in community events, and are physically active" (p. 54). Lastly, researchers noted that these ideas were relevant to both interviewable and non-interviewable residents, stating that non-interviewable residents appeared "happier" and "less

agitated" in homes with many individualized planned activities for them. These findings, in conjunction with findings of my study demonstrating clear connections between social engagement and health outcomes, inform social work practice in nursing homes. Improving social integration for older adults in nursing homes by increasing their level of social engagement with people in their networks and with community groups is an important first step to improving quality of life for those in nursing homes.

Conclusion

In conclusion, future research and policy change is needed to expand the community mindset, inform current perceptions of nursing homes, and support new approaches for people who live in nursing homes. This study demonstrates that it is possible for older adults in nursing homes to be socially engaged and, similar to other populations of older adults, that more social engagement is related to better outcomes in functional health and well-being and depression. My research suggests that future work can identify specific strategies for improving social integration, which will help improve mental health and functional health and well-being of those in nursing homes.

Conceptually, Martinson and Minkler's (2006) discussion of civic engagement and older adults from a critical perspective speaks to this study's findings. Specifically, they state:

> "As gerontologists, we must continue to advocate for and develop programs and policies that promote an environment respectful of older people for who they are, not simply for what they can contribute. Such an environment would enable older people to live with dignity and to create their own meanings for later life. For some, that will include volunteer work and other forms of civic engagement. For others, it will not." (p. 323).

It is not that civic engagement should be required (or even expected) of older adults, but rather for those who are interested (or desire to be but are hesitant due to public perception), we should encourage and enable them to take part in civic or volunteer activities or in other meaningful activities. In essence, it is important to disseminate findings from this study and others like it to work towards shifting societal expectations so that people living in nursing homes have more chances to grow, set goals, adapt to changes, and secure resources in order to contribute to the overall health, creativity, and development of our society.

References

AARP. (2000). *Fixing to stay: A national survey on housing and home modification issues.* Washington, DC: Author.

AARP Public Policy Institute. (2009). *Providing more long-term care support and services at home: Why it's critical for health reform.* Washington, DC: Author.

Adams, K.B., Matto, H.C., & Sanders, S. (2004). Confirmatory factor analysis of the geriatric depression scale. *The Gerontologist, 44(6),* 818-826.

Allen, J.E. (2011). *Nursing home federal requirements, Guidelines to surveyors and survey protocols.* New York, NY: Springer Publishing Company.

Anderson, K.A., & Dabelko-Schoeny, H. (2010). Civic engagement for nursing home residents: A call for social work action. *Journal of Gerontological Social Work, 53(3),* 270-282.

Antonucci, T.C., & Akiyama, H. (1987). Social networks in adult life and a preliminary examination of the convoy model. *Journal of Gerontology, 42(5),* 519-527.

Ashida, S., & Heaney. C.A. (2008). Differential associations of social support and social connectedness with structural features of social networks and the health status of older adults. *Journal of Aging and Health, 20(7),* 872-893.

Barrera, M. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology, 14(4),* 413-445.

Barrera, M., Sandler, I.N., & Ramsay, T.B. (1981). Preliminary development of a scale of social support: Studies on college students. *American Journal of Community Psychology, 9,* 435-447.

Berkman, L.F. (1995). The role of social relations in health promotion. *Psychosomatic Medicine, 57,* 245-254.

Berkman, L.F., & Glass, T. (2000). Social integration, social networks, social support, and health. In L.F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 174-190). New York: Oxford University Press.

Berkman, L.F., Glass, T., Brissette, I., & Seeman, T.E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine, 51*, 843-857.

Bern-Klug, M., Kramer, K.W.O., Chan, G., Kane, R., Dorfman, L.T., & Saunders, J.B. (2009). Characteristics of nursing home social service directors: How common is a degree in social work? *Journal of the American Medical Directors Association, 10*, 36-44.

Bickel, R. (2007). *Multilevel analysis for applied research: It's just regression!* New York, NY: Guilford.

Biordi, D.L., & Nicholson, N.R. (2009). Social isolation. In P.D. Larsen, F.W. Whitney & I.M. Lubkin (Eds.), *Chronic illness: Impact and intervention* (pp. 85-115). Boston, MA: Jones and Bartlett Publishers.

Bott, M., Dunton, N., Gajewski, B., Lee, R., Boyle, D., Bonnel, W., Averett, E., Becker, A., Coffland, V., Wrona, M., Chapin, R. & Rachlin, R. (2009). *Culture change and turnover in Kansas nursing homes, for the Kansas Department on Aging.* Lawrence, KS: University of Kansas School of Nursing.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 513-531.

Brooke, P. & Bullock, R. (1999).Validation of a 6 item cognitive impairment test with a view to primary care usage. *International Journal of Geriatric Psychiatry, 11,* 936-403.

Brown, T.A. (2006). *Confirmatory factor analysis for applied research.* New York, NY: Guilford.

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. Bollen & J. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Callaghan, P., & Morrissey, J. (1993). Social support and health: A review. *Journal of Advanced Nursing, 18,* 203-210.

Capitman, J., Bishop, C., & Casler, R. (2005). *Long-Term Care Quality: Historical overview and current initiatives.* Washington, DC: National Quality Forum.

Caplan, G. (1974). *Support systems and community mental health: Lectures on concept development.* New York, NY: Behavioral Publications.

Carp, F.M. (1989). Maximizing data quality in community studies of older people. In M.P. Lawton & A.R. Herzog (Eds.), *Special research methods for gerontology* (pp. 93-122). Amityville, NY: Baywood Publishing Company.

Cassel, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology, 104,* 107-123.

Centers for Medicare & Medicaid Services. (2011). *State operations manual. Appendix PP guidance to surveyors for long term care facilities.* (Rev. 70, 01-07-11). Retrieved on February 28, 2013 from http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs-Items/CMS1201984.html

Centers for Medicare & Medicaid Services. (2012). Long-term care, What is long-term care? Retrieved March 5, 2013 from http://www.medicare.gov/longtermcare/static/home.asp

Centers for Medicare & Medicaid Services. (2013a). Home & community-based services. Retrieved on March 5, 2013 from http://www.medicaid.gov/Medicaid-CHIP-Program-

Information/By-Topics/Long-Term-Services-and-Support/Home-and-Community-Based-Services/Home-and-Community-Based-Services.html

Centers for Medicare & Medicaid Services. (2013b). Survey & certification-certification & compliance, Nursing homes. Retrieved on February 8, 2013 from www.cms.gov/Medicare/Provider-Enrollment-and-Certification/Certificationand Complianc/

Cernin, P.A., Cresci, K., Jankowski, T.B., & Lichtenberg, P.A. (2010). Reliability and validity testing of the short-form health survey in a sample of community-dwelling African American older adults. *Journal of Nursing Measurement, 18(1),* 49-59.

Chapin, R.K., Baca, B., Macmillan, K., Rachlin, R., & Zimmerman, M. (2009). Residential outcomes for nursing facility applicants who have been diverted: Where are they 5 years later? *The Gerontologist, 49(1),* 46-56.

Chapin, R., Sergeant, J.F., Landry, S.T., Leedahl, S.N., Rachlin, R., Koenig, T.L., & Graham, A. (2013). Reclaiming Joy: Pilot evaluation of a mental health peer support program for Medicaid Waiver recipients. *The Gerontologist, 53(2),* 345-352.

Chou, S., Boldy, D.P., & Lee, A.H. (2002). Resident satisfaction and its components in residential aged care. *The Gerontologist, 42(2),* 188-198.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38,* 300-314.

Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of physical disease. *Health Psychology Medicine, 38,* 300-314.

Coleman, J.S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94,* S94-S120.

Comrey, A.L., & Lee, H.B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Dabelko-Schoeny, H., Anderson, K.A., & Spinks, K. (2010). Civic engagement for older adults with functional limitations: Piloting an intervention for adult day health participants. *The Gerontologist, 50(5),* 694-701.

Dattalo, P. (2010). Ethical dilemmas in sampling. *Journal of Social Work Values and Ethics, 7(1)*. Retrieved from http://www.socialworker.com/jswve/

Davenport, K., Hodin, R.M., & Feder, J. (2010). *The "dual eligible" opportunity, Improving care and reducing costs for individuals eligible for Medicare and Medicaid.* Washington, DC: Center for American Progress.

Dedrick, R.F., & Greenbaum, P.E. (2011). Multilevel confirmatory factor analysis of a scale measuring interagency collaboration of children's mental health agencies. *Journal of Emotional and Behavioral Disorders, 19(1),* 27-40.

Doty, P. (1996). Caring for frail elderly people: Policies in evolution. *Chapter 14: United States.* Washington, DC: U.S. Department of Health and Human Services.

Doty, M.M., Koren, M.J., & Sturla, E.L. (2008). *Culture change in nursing homes: How far have we come? Findings from The Commonwealth Fund 2007 National Survey of Nursing Homes.* New York, NY: The Commonwealth Fund.

Enders, C.K. (2010). *Applied missing data analysis.* New York, NY: The Guilford Press.

Fabricant, M., & Fisher, R. (2002). *Settlement houses under siege: The struggle to sustain community organizations in New York City.* New York, NY: Columbia University Press.

Fagan, R.M. (2003). Pioneer network: Changing the culture of aging in America. *Journal of Social Work in Long-Term Care, 2(1/2),* 125-140.

Ferlander, S. (2007). The importance of different forms of social capital for health. *Acta Sociologica, 50(2),* 115-128.

Findlay, R. (2003). Interventions to reduce social isolation among older people: Where is the evidence? *Aging & Society, 23,* 647-658.

Floyd, F.J., & Widaman, K.F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7(3),* 286-299.

Florio, E., Jensen, J., Hendryx, M., Raschko, R., & Mathieson, K. (1998). One-year outcomes of older adults referred for aging and mental health services by community gatekeepers. *Journal of Case Management, 7(2),* 74-83.

Forbes-Thompson, S., Dunton, N., Gajewski, B., Wrona, M., Becker, A., Chapin, R.,… Zimmerman, M. (2003). *Kansas nursing facility project evaluation, for the Kansas Department on Aging*. Lawrence, KS: University of Kansas School of Nursing.

Fraser, S.N., & Rodgers, W.M. (2009). Influences of upstream social factors on downstream perceptions of social support in Cardiac Rehabilitation. *Journal of Applied Social Psychology, 39(7),* 1739-1761.

Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models.* Cambridge, UK: Cambridge University Press.

Gitterman, A., & Germain, C.B. (1976). Social work practice: A life model. *Social Service Review, 50,* 601-610.

Gitterman, A., & Germain, C.B. (2008). *The life model of social work practice* (3rd ed.). New York: Columbia University Press.

Glass, T.A., Mendes de Leon, C.F., Bassuk, S.S., & Berkman, L.F. (2006). Social engagement and depressive symptoms in late life. *Journal of Aging and Health, 18(4),* 604-628.

Glisson, C. (2002). The organizational context of children's mental health services. *Clinical and Child and Family Psychology Review, 5*, 233-253.

Goffman, E. (1961). *Asylums.* London, England: Penguin Books.

Grabowski, D.C. (2006). The cost-effectiveness of noninstitutional long-term care services: Review and synthesis of the most recent evidence. *Medical Care Research, 63(3),* 3-28.

Graham, J.W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology, 60,* 549-576.

Graham, J.W., Hofer, S. M., & MacKinnon, D. P. (1996). Maximizing the usefulness of data obtained with planned missing value patterns: An application of maximum likelihood procedures. *Multivariate Behavioral Research, 31,* 197–218.

Graham, J.W., Olchowski, A.E., & Gilreath, T.D. (2007). How many imputations are really needed? Some practical clarifications of multiple imputation theory. *Prevention Science, 8(3),* 206-213.

Graham, J.W., Taylor, B.J., Olchowski, A.E., & Cumsille, P.E. (2006). Planned missing data designs in psychological research. *Psychological Methods, 11(4),* 323-343.

Harrington, C., & Swan, J.H. (2003). Nursing home staffing, turnover, and case mix. *Medical Care Research and Review, 60(3),* 366-392.

Hawkley, L.C., Masi, C.M., Berry, J.D., & Cacioppo, J.T. (2006). Loneliness is a unique predictor of age-related differences in systolic blood pressure. *Psychology and Aging, 21(1),* 152-164.

Hawthorne, G. (2006). Measuring social isolation in older adults: Development and initial validation of the Friendship Scale. *Social Indicators Research, 77(3),* 521-548.

Heck, R.H. (2001). Multilevel modeling with SEM. In G.A. Marcoulides & R.E. Schumaker (Eds.), *New developments and techniques in structural equation modeling* (pp. 89-127). Mahwah, NJ: Lawrence Erlbaum Associates.

Heinrich, L.M., & Gullone, E. (2006). The clinical significance of loneliness: A literature review. *Clinical Psychology Review, 26(6),* 605-718.

Hofer, S.M., & Hoffman, L. (2007). Statistical analysis with incomplete data: A developmental perspective. In T.D. Little, J.A. Bovaird, & N.A. Card (Eds.), *Modeling contextual effects in longitudinal studies* (pp. 13-32). Mahwah, NJ: Lawrence Erlbaum Associates.

Hooyman, N.R., & Kiyak, H.A. (2011). *Social gerontology, A multidisciplinary perspective* (9th ed.). Boston, MA: Allyn & Bacon.

House, J.S. (2001). Social isolation kills, but how and why? Editorial comment. *Psychosomatic Medicine, 63,* 273-274.

House, J.S., Landis, K.R., & Umberson, D. (1988). Social relationships and health. *Science, 241,* 540-545.

Houser, A., Fox-Grage, W., & Ujvari, K. (2012). *Across the States 2012: Profiles of long-term services and supports.* Washington, DC: AARP Public Policy Institute. Retrieved February 26, 2013 from http://www.aarp.org/home-garden/livable-communities/info-09-2012/across-the-states-2012-profiles-of-long-term-services-supports-AARP-ppi-ltc.html

Hox, J. (2002). *Multilevel analysis, techniques, & applications.* Mahweh, NJ: Lawrence Erlbaum Associates.

Ice, G. H. (2002). Daily life in a nursing home: Has it changed in 25 years? *Journal of Aging Studies, 16,* 345-359.

Jacobson, G., Neuman, T., & Damico, A. (2010). *Medicare spending and use of medical services for beneficiaries in nursing homes and other long-term care facilities: A potential for achieving Medicare savings and improving the quality of care.* Menlo Park, CA: The Henry J. Kaiser Family Foundation.

Jakobsson, U. (2006). Using the 12-item short form health survey (SF-12) to measure quality of life among older people. *Aging Clinical and Experimental Research, 19(6),* 457-464.

Jang, Y., Mortimer, J.A., Haley, W.E., & Borenstein Graves, A.R. (2004). The role of social engagement in life satisfaction: Its significance among older individuals with disease and disability. *Journal of Applied Gerontology, 23(3),* 266-278.

Jones, A.L., Dwyer, L.L., Bercovitz, A.R., & Strahan, G.W. (2009). *The National Nursing Home Survey: 2004 overview.* (DHHS Publication No. PHS 2009-1738). Washington, DC: U.S. Government Printing Office.

Kahn, R.L., & Antonucci, T.C. (1980). Convoys over the life course: Attachment, roles, and social support. In P.B. Baltes & O.G. Brim (Eds.), *Life-span development and behavior* (pp. 253-286). New York: Academic Press.

Kaiser Commission on Medicaid and the Uninsured. (2011). *Federal core requirements and state options in Medicaid: Current policies and key issues.* Washington, DC: The Henry J. Kaiser Family Foundation.

Kaiser Commission on Medicaid and the Uninsured. (2013). *Medicaid: A primer.* Menlo Park, CA: The Henry J. Kaiser Family Foundation.

Kaiser Commission on Medicaid Facts. (2012). *Medicaid and long term care services and supports.* Washington, DC: The Henry J. Kaiser Foundation.

Kane, R.A. (2001). Long-term care and a good quality of life. *The Gerontologist, 41(3),* 293-304.

Kane, R.L., & Kane, R.A. (2000). *Assessing older persons.* New York, NY: Oxford University Press.

Kaye, H.S., Harrington, C., & LaPlante, M.P. (2010). Long-term care: Who gets it, who provides it, who pays, and how much? *Health Affairs, 29(1),* 11-21.

Kehoe, M.A., & Van Heesch, B. (2003). Culture change in long term care: The wellspring model. *Journal of Social Work in Long-Term Care, 2(1/2),* 159-173.

Keller, K., Flatten, E., & Wilhite, B. (1988). Friendly visiting as a means of informing homebound senior citizens of health-related community services. *Journal of Community Health, 13(4),* 231-240.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford Press.

Krause, N., & Markides, K.S. (1990). Measuring social support among older adults. *International Journal of Aging and Human Development, 30(1),* 37-53.

Krause, N., & Shaw, B. (2002). Welfare participation and social support in late life. *Psychology and Aging, 17(2),* 260-270.

Kreft, I.G.G., & de Leeuw J.D. (1998). *Introducing multilevel modeling.* Thousand Oaks, CA: Sage.

Lauder, W., Mummery, K., Jones, M., & Caperchione, C. (2006). A comparison of health behaviours in lonely and non-lonely populations. *Psychology, Health and Medicine, 11(2),* 233-245.

Lee, J.R., Paultre, F., & Mosca, L. (2005). The association between educational level and risk of cardiovascular disease fatality among women with cardiovascular disease. *Women's Health Issues, 15(2),* 80-88.

Lee, R., Gajewski, B., & Thompson, S. (2006). Reliability of the nursing home survey process: A simultaneous survey approach. *The Gerontologist, 46*(6), 772-780.

Leedahl, S.N., Koenig, T.L., & Ekerdt, D. J. (2011). Perceived benefits of VFW Post participation for older adults. *Journal of Gerontological Social Work, 54(7),* 1-18.

Lin, N. (2001). *Social capital*. Cambridge, UL: Cambridge University Press.

Lin, N., Dean, A., & Ensel, W.M. (1986). *Social support, life events and depression.* New York: Academic Press.

Lincoln, K.S. (2000). Social support, negative interactions, and psychological well-being. *Social Service Review, 74(2),* 231-252.

Little, T.D. (in press). *Longitudinal structural equation modeling*. New York, NY: Guilford Press.

Little, T.D., Cunningham, W.A., Shahar, G., & Widaman, K.F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling, 9(2),* 151-173.

Little, T.D., Lindenberger, U., & Nesselroade, J.R. (1999). On selecting indicators for multivariate measurement and modeling with latent variables: When "good" indicators are bad and "bad" indicators are good. *Psychological Methods, 4,* 192–211.

Little, T.D., Slegers, D.W., & Card, N.A. (2006). A non-arbitrary method of identifying and scaling latent variables in SEM and MACS models. *Structural Equation Modeling: A Multidisciplinary Journal, 13(1),* 59-72.

Lopez, M.N., Quan, N.M., & Carvajal, P.M. (2010). A psychometric study of the Geriatric Depression Scale. *European Journal of Psychological Assessment, 26(1),* 55-60.

Lubben, J., Blozik, E., Gillmann, G., Iliffe, S., von Renteln Kruse, W., Beck, J., & Stuck, A. (2006). Performance of an abbreviated version of the Lubben Social Network Scale among three European community-dwelling older adult populations. *The Gerontologist,* 46(4), 503-513.

Mahan, T.L. (2005). *Perceived control in older adults living in long-term care facilities.* Retrieved from Proquest (AAT 3169416).

Malench, S.S. (2004). Family and social work roles in the long-term care facility. *Journal of Gerontological Social Work, 43(1),* 49-60.

Martinson, M., & Minkler, M. (2006). Civic engagement and older adults: A critical perspective. *The Gerontologist, 46(3),* 318-324.

Maruish, M.E., & Kosinski, M. (2009). *A guide to the development of certified short form survey interpretation and reporting capabilities.* Lincoln, RI: QualityMetric Incorporated.

Matz-Costa, C., Besen, E., Boone James, J., & Pitt-Catsouphes, M. (in press). Differential impacts of multiple levels of productive activity engagement on psychological well-being in middle and later life. *The Gerontologist.*

McDade, T.W., Hawkley, L.C., & Cacioppo, J.T. (2006). Psychosocial and behavioral predictions of inflammation in middle-aged and older adults: The Chicago Health, Aging, and Social Relations Study. *Psychosomatic Medicine, 68(3),* 376-381.

McGilton, K.S., & Boscart, V.M. (2007). Close care provider-resident relationships in long-term care environments. *Journal of Clinical Nursing, 16,* 2149-2157.

McGivney, S.A., Mulvihill, M., & Taylor, B. (1994). Validating the GDS depression screen in the nursing home. *Journal of the Geriatric Society, 42,* 490-492.

McInnis, G.J., & White, J.H. (2001). A phenomenological exploration of loneliness in the older adult. *Archives of Psychiatric Nursing, 15(3),* 128-139.

Mendes de Leon, C.F., Glass, T.A., & Berkman, L.F. (2003). Social engagement and disability in a community population of older adults. *American Journal of Epidemiology, 157(7*), 633-642.

Mertler, C. A., & Vannatta, R. A. (2005). *Advanced and multivariate statistical methods: Practical application and interpretation* (3rd ed.). Los Angeles, CA: Pyrczak.

Mitchell, A.J., Bird, V., Rizzo, M., & Neader, M. (2010). Which version of the Geriatric Depression Scale is most useful in medical settings and in nursing homes? Diagnostic validity meta-analysis. *American Journal of Geriatric Psychiatry, 18(12),* 1066-1077.

Mitchell, J.M., & Kemp, B.J. (2000). Quality of life in assisted living homes: A multi-dimension analysis. *Journal of Gerontology: Psychological Sciences, 55B(2),* P117-P127.

Morrow-Howell, N., Hinterlong, J., Rozario, P.A., & Tang, F. (2003). Effects of volunteering on the well-being of older adults. *Journal of Gerontology Series B: Psychological and Social Sciences, 58,* S137-S145.

Muthén, B., & Asparouhov, T. (2011). Beyond multilevel regression modeling: Multilevel analysis in a general latent variable framework. In J. Hox & J.K. Roberts (Eds.), *Handbook of Advanced Multilevel Analysis* (pp. 1-42). New York, NY: Taylor and Francis.

Muthén, L.K., & Muthén, B.O. (2010). *Mplus, Statistical analysis with latent variables, User's guide.* Los Angeles, CA: Muthén & Muthén.

Narayan, D., & Cassidy, M.F. (2001). A dimensional approach to measuring social capital: Development and validation of a social capital inventory. *Current Sociology, 49*, 59-102.

National Association of Social Workers. (2003). *NASW standards for social work services in long-term care facilities*. Washington, DC: NASW Press.

National Association of Social Workers. (2008). *Code of ethics of the National Association of Social Workers*. Washington, DC: NASW Press. Retrieved March 5, 2013 from http://www.socialworkers.org/pubs/code/code.asp

National Association of Social Workers. (2013). Definitions. Retrieved March 13, 2013 from http://www.naswdc.org/practice/intl/definitions.asp

National Academy on an Aging Society. (n.d.). Civic engagement in an older America. Retrieved on February 8, 2013 from http://www.agingsociety.org/agingsociety /Civic%20Engagement/about_civic_engagement.htm

Norstrand, J.A., & Xu, Q. (2011). Social capital and health outcomes among older adults in China: The urban-rural dimension. *The Gerontologist, 52(3),* 325-334.

Omnibus Reconciliation Act of 1987, Pub. L. No. 100-203, Sec. 42, 101 Stat. 1330.

O'Shaughnessy, C., Lyke, B., & Storey, J.R. (2002). *Long-term care: What direction for public policy*? The Library of Congress. Washington, DC: Congressional Research Service.

Pinquart, M., & Sorensen, J. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and Applied Social Psychology, 23(4),* 245-266.

Poortinga, W. (2005). Social relations or social capital? Individual and community health effects of bonding social capital. *Journal of Social Science & Medicine, 11,* 1-16.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology, 24,* 1-24.

Preacher, K.J., & Coffman, D.L. (2006). *Computing power and minimum sample size for RMSEA* [Computer software]. Retrieved from http://quantpsy.org.

Putnam, R.D. (1995). Bowling alone: America's declining social capital. *Journal of Democracy, 6.1,* 65-78.

Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Simon and Schuster.

Raghunathan, T.E., & Grizzle, J.E. (1995). A split questionnaire survey design. *Journal of the American Statistical Association, 90(429),* 54-63.

Rahman, A.N., & Schnelle, J.F. (2008). The nursing home culture-change movement: Recent past, present, and future directions for research. *The Gerontologist, 48(2),* 142-148.

Reeves, E., & Young, K. (2013). *Medicaid's role in meeting the long-term care needs of America's seniors.* Washington, DC: Kaiser Commission on Medicaid and the Uninsured.

Rehnquist, J. (2003). *Psychosocial services in skilled nursing facilities.* (Publication No. OEI-02-01-00610). Washington, DC: Department of Health and Human Services, Office of Inspector General.

Reid, W.J. (2002). Knowledge for direct social work practice: An analysis of trends. *Social Service Review, 76,* 6-33.

Resnick, B., & Nahm, E.S. (2001). Reliability and validity testing of the revised 12-item short-form health survey in older adults. *Journal of Nursing Measurement, 9(2),* 151-161.

Richard, L., Potvin, L., Kishchuk, N., Prlic, H., & Green, L.W. (1996). Assessment of the integration of the ecological approach in health promotion programs. *American Journal of Health Promotion, 10(4),* 318-328.

Robbins, S.P., Chatterjee, P., & Canda, E.R. (2012). *Contemporary human behavior theory.* Boston, MA: Pearson Education.

Robinson, W.S. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review, 15,* 351-357.

Rogers, A.T. (2006). *Human behavior in the social environment.* Boston, MA: McGraw Hill.

Rogers, S., & Komisar, H. (2003). *Who needs long-term care?* Washington, DC: Georgetown University, Long-Term Care Financing Project.

Rubinstein, R.L. (2000). Resident satisfaction, quality of life, and "lived experience" as domains to be assessed in long-term care. In J. Cohen-Mansfield, F.K. Ejaz, & P. Werner (Eds.), S*atisfaction surveys in long term care* (pp. 13-28). New York, NY: Springer Publishing.

Sanders, G.F., Fitzgerald, M.A., & Bratteli, M. (2008). Mental health services for older adults in rural areas: An ecological systems approach. *Journal of Applied Gerontology, 27,* 252-266.

Schafer, J.L., & Graham, J.W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7(2),* 147-177.

Schumacker, R.E., & Lomax, R.G. (1996). *A beginner's guide to structural equation modeling.* Mahwah, NJ: Lawrence Erlbaum Associates.

Siebert, D.C., Mutran, E.J., & Reitzes, D.C. (1999). Friendship and social support: The importance of role identity to older adults. *Social Work, 44(6),* 522-533.

Simons, K. (2006). Organizational characteristics influencing nursing home social service directors' qualifications: A national study. *Health Social Work, 31*, 266-274.

Simons, K., Bern-Klug, M., & An, S. (2012). Envisioning quality psychosocial care in nursing homes: The role of social work. *Journal of the American Medical Directors Association, 13*, 800-805.

Simons, K.V., & Jankowski, T.B. (2011). Factors influencing nursing home social workers' intentions to quite employment. *Administration in Social Work, 32(1),* 5-21.

Smith, K.P., & Christakis, N.A. (2008). Social networks and health. *Annual Review of Sociology, 34*, 405-429.

Solomon, B.B. (1987). Empowerment: Social work in oppressed communities. *Journal of Social Work Practice,* 79-91.

Stone, R. I. (2003). Selecting a model or choosing your own culture. *Journal of Social Work in Long-Term Care, 2(3/4),* 411-422.

Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.

Tomaka, J., Thompson, S., & Palacios, R. (2006). The relation of social isolation, loneliness, and social support to disease outcomes among the elderly. *Journal of Aging and Health, 18(3),* 359-384.

Unger, M. (2002). A deeper, more social ecological social work practice. *Social Service Review, 76(3),* 480-497.

U.S. Department of Health and Human Services. (2013). HealthyPeople.gov. Retrieved on February 28, 2013 from http://www.healthypeople.gov/2020/

Van Baarsen, B. (2002). Theories on coping with loss: The impact of social support and self-esteem on adjustment to emotional and social loneliness following a partner's death in later life. *Journal of Gerontology, 57B(1),* S33-S42.

Van Baarsen, B., Smit, J.H., Snijders, T.A.B., & Knipscheer, K.P.M. (1999). Do personal conditions and circumstances surrounding partner loss explain loneliness in newly bereaved older adults? *Ageing and Society, 19,* 441-469.

Victor, C., Scambler, S., & Bond, J. (2009). *The social world of older people, Understanding loneliness and social isolation in later life.* New York, NY: McGraw-Hill.

Victor, C., Scambler, S., Bond, J., & Bowling, A. (2000). Being alone in later life: Loneliness, social isolation, and living alone. *Reviews in Clinical Gerontology, 10,* 407-417.

Vladek, B.C. (1980). *Unloving care: The nursing home tragedy*. Washington DC: Basic Books.

von Bertalanffy, L. (1972). The history and status of general systems theory. *The Academy of Management Journal, 15(4),* 407-426.

Wallace, M., & Shelkey, M. (2008). Monitoring functional status in hospitalized older adults, The Katz Index of Independence in Activities of Daily Living can help nurses detect subtle changes in health and prevent functional decline. *American Journal of Nursing, 108(4),* 64-71.

Ware, J. E., Kosinski, M., & Keller, S. D. (1996). A 12 item short-form health survey: Construction of scales and preliminary tests of reliability and validity. *Medical Care, 34,* 220–233.

Weiner, J.M., Freiman, M. P., & Brown, D. (2007). *Nursing home quality, Twenty years after The Omnibus Budget Reconciliation Act of 1987. Washington, DC:* The Henry J. Kaiser Family Foundation.

Weismiller, T., & Whitaker, T. (2012). Social work profession. In T. Mizrahi & L.E. David (Eds.), *Encyclopedia of Social Work* (20th ed.). New York, NY: Oxford University Press. Retrieved from Oxford Reference at www.oxfordreference.com

World Health Organization. (2002). *Active ageing: A policy framework*. Geneva, Switzerland: Author.

Yuan, K.H., Chan, W., & Bentler, P.M. (2000). Robust transformation with applications to structural equation modeling. *British Journal of Mathematical and Statistical Psychology, 53,* 31-50.

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huanh, V., Adey, M., et al. (1983). Development and validation of a Geriatric Depression Screening Scale: A preliminary report. *Journal of Psychiatric Research, 17,* 37–49.

Yuan, K.-H., & Bentler, P. M. (2007). Multilevel covariance structure analysis by fitting multiple single-level models. *Sociological Methodology, 37,* 53-82.

Zarit, S.H., & Zarit, J.M. (2007). *Mental disorders in older adults* (2nd ed.). New York, NY: Guilford Press.

Appendices

Appendix A: Nursing Home Resident Survey Questions

Appendix B: Kansas Culture Change Instrument (KCCI) Leader Version

Appendix C: Methodological Details

Appendix D: Additional Figures & Tables

Appendix A: Nursing Home Resident Survey Questions

Study Constructs, Questions, and 3-Form Planned Missing Data Set

Construct/Variable	Description/Questions	Set (X, A, B, or C)
Social Networks	Derived from Antonucci & Akiyama (1987)	
Size	# of people in your social network (list up to 20 and place in concentric circles delineating closeness of the relationships)	X
Proximity Within	# network members within the facility	X
Proximity Outside	# network members outside the facility within 1-hour drive	X
Frequency	# number of network members with contact (e.g., over the phone, in-person) at least once a week	X
Social Capital	Derived from Narayan & Cassidy (2001)	
Social groups	How many groups or organizations do you belong to? (This could be religious groups, social clubs, resident groups, or just groups of people who get together regularly to do an activity or task).	X
Norms of reciprocity	*Using a Likert scale,* 1) Would you say that most of the time people are just looking out for themselves, or they are trying to be helpful? (1. Are just looking out for themselves; 4. Try to be helpful) 2) Do you think that most people would try to take advantage of you if they go the chance, or would they try to be fair?	 X C
Trust	*Now I want you to ask you how much you trust different groups of people. Using a Likert scale, how much do you feel you can trust the people in each of the following groups?* 1) People in your community (town or city facility is in) 2) People in your neighborhood (area around the facility) 3) Residents in the facility 4) Staff in the facility 5) People who belong to the same groups, clubs, and organizations, as you 6) Business owners you buy things from or do business with 7) Politicians 8) People in your family 9) Local government (e.g., mayor, city council) 10) Judges/ police	 C B B X B A A C C A
Social Support	Inventory of Socially Supportive Behaviors (ISSB) Barrera, et al. (1981)	
	Within the last year, how often have those in your social network? Using a Likert scale,	
Informational support	1) told you what they did in a stressful situation that was similar to one you were experiencing 2) suggested some action that you should take in dealing with a problem you were having 3) gave you information that made a difficult situation clearer and easier to understand 4) helped you understand why something didn't go well	A B X C

	5) told you who you should see for assistance with a problem you were having	C
	6) commented on how you were dealing with a problem *without* judging you	B
	7) checked back with you to see if you followed advice you were given on how to deal with a problem?	A
Tangible support	1) provided you with some transportation	C
	2) loaned or gave you something (a physical object other than money) that you needed	B
	3) pitched in to help you do something that needed to get done (within your room)	X
	4) helped you do some shopping?	A
Emotional support	1) Right there with you in-person when you were going through a stressful situations	X
	2) told you that you were OK just the way you are	A
	3) comforted you by showing you physical affection (e.g., hug, pat on arm)	B
	4) listened to you talk about your private feelings	A
	5) told you they felt very close to you	C
	6) joked and kidded to try to cheer you up	B
	7) expressed interest and concern in your well-being	A
	8) went with you to see someone who helped you with a problem you were having	A
	9) told you that they would keep the things you talked about just between the two of you	C
	10) did some activity together with you to help you get your mind off things	C
	11) told you how they felt in a situation that was similar to yours?	B
Provided support	1) depended on you for your guidance and advice	B
	2) depended on you for financial help	B
	3) talked over their problems and private feelings with you	X
	4) depended on you for something they needed (a physical object other than money)	C
	5) helped someone with their household chores (e.g., push the wheelchair for another resident)	C
	6) were with someone in-person they were experiencing a stressful situation	B
	7) comforted someone by showing them physical affection (e.g., hug, pat on arm)	A
	8) expressed interest and concern in someone's well-being	B
	9) told someone what you did in a stressful situation that was similar to one they were going through	A
	10) suggested some action someone should take to deal with a problem they were having	C
	11) told someone where they could go for assistance with a problem they were having?	A

Social Engagement	Derived from Mitchell & Kemp (2000)	
	How often do you take part in the following activities? Using a 6-point Likert Scale,	
Productive/Civic Socializing Activity Participation	1) talking on the phone	X
	2) visiting friends	X
	3) taking courses or participating in discussion groups or resident council meetings	X
	4) going on day trips	B
	5) attending church or synagogue activities	X
	6) playing games (e.g., card games, dominos, Wii)	X
	7) group exercise	A
	8) musical activities	C
	9) arts and crafts	C
	10) social gatherings or celebrations in the facility	B
	11) volunteering (e.g., helping out around the facility, talking to kids/groups who visit)	A
	12) voting	C
Functional Health & Well-Being	SF12v2® Ware, Kosinski, & Keller (1996)	
Physical Health Mental Health	1) In general, would you say your health is excellent, very good, good, fair, or poor?	X
	2a) Does your health now limit you in moderate activities?	B
	2b) Does your health now limit you in climbing several flights of stairs?	B
	3a) During the past 4 weeks, have you, as a result of your physical health, accomplished less than you would like?	A
	3b) During the past 4 weeks, have you, as a result of your physical health, been limited in work or other activities?	A
	4a) During the past 4 weeks, have you, as a result of emotional problems, accomplished less than you would like?	C
	4b) During the past 4 weeks, have you, as a result of emotional problems, not done work or other activities as carefully as usual?	A
	5) During the past 4 weeks, how much did pain interfere with your normal work?	B
	6a) How much of the time during the past 4 weeks have you felt calm or peaceful?	C
	6b) How much of the time during the past 4 weeks did you have a lot of energy?	C
	6c) How much of the time during the past 4 weeks have you felt downhearted and blue?	B
	7) During the past 4 weeks, how much of the time have your physical health or emotional problems interfered with your social activities?	C

Mental Health	Geriatric Depression Scale Yesavage et al. (1983)	
	Please answer "yes" or "no" to the following questions to how you felt in the past week:	
Dysphoric mood	1) Are you basically satisfied with your life?	X
Withdrawal-Apathy-Vigor	2) Have you dropped many of your activities and interests?	X
Hopelessness	3) Do you feel that your life is empty?	X
Worry/Anxiety	4) Do you often get bored?	B
Memory/Concentration	5) Are you hopeful for the future?	A
	6) Are you bothered by thoughts that you just cannot get out of your head?	B
	7) Are you in good spirits most of the time?	C
	8) Are you afraid that something bad is going to happen to you?	C
	9) Do you feel happy most of the time?	B
	10) Do you often feel helpless?	A
	11) Do you often get restless and fidgety?	C
	12) Do you prefer to stay at home (in your room), rather than going out and doing new things?	B
	13) Do you frequently worry about the future?	C
	14) Do you feel you have more problems with memory than most?	C
	15) Do you think it is wonderful to be alive now?	A
	16) Do you often feel downhearted and blue?	B
	17) Do you feel pretty worthless the way you are now?	B
	18) Do you worry a lot about the past?	A
	19) Do you find life very exciting?	A
	20) Is it hard for you to get started on new projects?	A
	21) Do you feel full of energy?	A
	22) Do you feel that your situation is hopeless?	C
	23) Do you think that most people are better off than you are?	A
	24) Do you frequently get upset over little things?	C
	25) Do you frequently feel like crying?	A
	26) Do you have trouble concentrating?	B
	27) Do you enjoy getting up in the morning	C
	28) Do you prefer to avoid social gatherings?	A
	29) Is it easy for you to make decisions?	B
	30) Is your mind as clear as it used to be?	B
Covariates		
Activities of Daily Living	*Using 3-category scoring, is the individual independent, assistance limited in scope, or extensive assistance/does not do activity:*	
	1) bathe	C
	2) dress	X
	3) using bathroom	X
	4) transfer (e.g., moving from chair to bed)	B
	5) eating (e.g., feeding self)	X
	6) maintain bowel and bladder continence (e.g., use pad or depends)	A

Cognitive functioning	1) What year is it now? 2) What month is it now? Repeat after me (memory phrase): John Brown, 42 West Street, Bedford. 3) About what time is it (within 1 hour)? 4) Count backwards 20 to 1? 5) Say months in reverse order? 6) Repeat the memory phrase?	X C X B A X
Socioeconomic status	Years of education	X

Appendix B: Kansas Culture Change Instrument (KCCI) Leader Version

"Culture change" is an effort to make a nursing home less like an institution and more like a home while maintaining quality of life for those who live and work there. Core values include choice for residents, improving quality of care, staff empowerment and creating a homelike setting.

Tell us about your nursing home. Please answer each question as you believe it really is, not as you think it should be.

For the following questions please circle the number that best describes the way you feel about each question. For example, if you wish to answer **"Always"** then circle the "4" in the column that is marked **"Always"**.

Please circle the number in the column that best describes your response.

Resident Care	**Never**	**Some-times**	**Often**	**Always**
Residents choose when they eat each meal.	1	2	3	4
At mealtime, residents help themselves or tell staff what they want to eat.	1	2	3	4
Residents choose the time of day they bathe.	1	2	3	4
Residents choose the way they bathe (for example, shower, bed bath, or bathtub).	1	2	3	4
Care plans are based on residents' requests.	1	2	3	4
Residents can sleep late and still get breakfast.	1	2	3	4
Residents go to bed for the night at any time they want.	1	2	3	4
The nursing home has activities designed for residents with memory problems.	1	2	3	4
Residents, who are able, dress themselves even if it takes a long time.	1	2	3	4

Nursing Home Environment	**Never**	**Some-times**	**Often**	**Always**
Residents decorate their own rooms.	1	2	3	4
Residents can meet with visitors in a living room shared by a small group of residents.	1	2	3	4
Residents eat in a living room shared by a small group of residents.	1	2	3	4
The nursing home has live indoor plants and flowers.	1	2	3	4
This nursing home has pets here.	1	2	3	4
Children from the community come to visit residents.	1	2	3	4
This nursing home looks and "feels" like home.	1	2	3	4
Spur of the moments activities happen here.	1	2	3	4
This nursing home displays residents' personal items, such as family photos, in common living areas outside of their rooms.	1	2	3	4

Residents can get to outdoor spaces without staff help.	1	2	3	4

Relationships	**Never**	**Some-times**	**Often**	**Always**
Staff work with the same group of residents.	1	2	3	4
Families know who takes care of their loved ones.	1	2	3	4
The outside community is involved in nursing home care.	1	2	3	4
We meet with family members to explain their role in their loved one's care.	1	2	3	4
Families visit their loved one.	1	2	3	4
This nursing home has community volunteers.	1	2	3	4
Children from the community participate in programs with residents in the nursing home.	1	2	3	4
This nursing home takes time to remember residents who die.	1	2	3	4
Residents and staff are encouraged to talk about their feelings when a resident dies.	1	2	3	4
Residents choose to spend time with each other on their own.	1	2	3	4

For the following questions "Staff" refers to all employees of the nursing home in all departments. "Direct care staff" refers to employees who provide hands-on resident care. For example, the CNAs, CMAs, licensed nurses, social services, activities, dietary workers and therapy staff.

Staff Empowerment	**Never**	**Some-times**	**Often**	**Always**
Direct care staff have input into resident care planning.	1	2	3	4
Certified aides take part in resident care plan meetings.	1	2	3	4
Direct care staff know when a resident's care plan has been changed.	1	2	3	4
Staff teams create their own work schedules.	1	2	3	4
Staff work together to cover shifts when someone can't come to work.	1	2	3	4
Staff are cross-trained to perform tasks outside of their assigned job duties.	1	2	3	4
This nursing home gives raises and other rewards to staff who receive extra training or education.	1	2	3	4
Direct care staff take part in quality improvement teams.	1	2	3	4
Staff are empowered to contact family direct when a resident has a personal need.	1	2	3	4
Staff grow as individuals here.	1	2	3	4

For the next questions, “Nursing home leaders” refers to the Administrator, Director of Nursing, and Department Heads.

Nursing Home Leadership	**Never**	**Some-times**	**Often**	**Always**
Nursing home leaders value team members from all departments.	1	2	3	4
Decisions in the home are made by teams that involve direct care staff.	1	2	3	4
Nursing home leaders hire staff who really care, not "just anyone."	1	2	3	4
Nursing home leaders try to improve working conditions.	1	2	3	4
Nursing home leaders ignore ideas from staff.	1	2	3	4
Nursing home leaders ask questions with an open mind.	1	2	3	4
Nursing home leaders are available when staff need to talk.	1	2	3	4
Supervisors treat aides with respect.	1	2	3	4
Exit interviews are conducted when staff leave.	1	2	3	4
Changes in operations are made as a result of exit interview data.	1	2	3	4

Shared Values	**Never**	**Some-times**	**Often**	**Always**
Nursing home leaders and staff share values and common goals related to:				
Homelike environment	1	2	3	4
Choice for residents	1	2	3	4
Respect for residents	1	2	3	4
Respect for co-workers	1	2	3	4
Decision making	1	2	3	4
Quality of life for residents	1	2	3	4
Quality of work life for staff	1	2	3	4

For the following questions “Staff” refers to all employees of the nursing home in all departments. “Direct care staff” refers to employees who provide hands-on resident care. For example, the CNAs, CMAs, licensed nurses, social services, activities, dietary workers and therapy staff.

For the following questions please circle the number that best describes the way you feel about each question. For example, if you wish to answer "Strongly Agree" then circle the "4" in the column that is marked "Strongly Agree."

Quality Improvement	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**
Staff turnover at this nursing home is low.	1	2	3	4
This nursing home evaluates our care and services to make improvements.	1	2	3	4

The data we collect help identify problems with services.	1	2	3	4
This nursing home has a plan for lowering turnover.	1	2	3	4
This nursing home activity tries to keep employees working here.	1	2	3	4
Staff are updated about budget and cost changes.	1	2	3	4
Direct care staff, including aides, have input into the budget to care for their residents.	1	2	3	4
Staff ideas are used to reduce waste time and effort.	1	2	3	4

Is your nursing home currently involved in culture change? (Select only one)

_____ There is *no discussion* around culture change.

_____ Culture change is *under discussion*, but we *haven't changed* the way we take care of residents.

_____ Culture change has *partially changed* the way we care for residents in *some* or all areas of the organization.

_____ Culture change has *completely changed* the way we take care of residents in *some areas* of the organization.

_____ Culture change has *completely changed* the way we take care of residents in *all areas* of the organization.

How many years has your nursing home been involved in culture change activities? _____

What is your nursing home's case mix index? _____

Do residents in your nursing home live in small households or neighborhoods?
_____ Yes _____ No

What date did you start working in this nursing home? _____

What is the highest degree you have attained? _____

Gender _____ Male _____ Female

Hispanic _____ Yes _____ No

Racial category (Select only one)

_____ American Indian
_____ Alaska Native
_____ Pacific Islander or Asian
_____ Black or African American
_____ White
_____ Other or more than one race

Approved by the Human Subjects Committee University of Kansas, Lawrence Campus (HSCL). Approval expires one year from 4/4/2011. HSCL #19353

Appendix C: Methodological Details

Data Cleaning

Following data imputation for data cleaning and data verification purposes, descriptive statistics were used to identify outliers, establish normality, and assess linearity, multicollinearity, and homoscedasticity prior to conducting CFA (Tabachnick & Fidell, 2007). Mahalanobis distance, "the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables," values were examined for each case to determine multivariate outliers (Tabachnick & Fidell, 2007, p. 74). Only one case (i.e., 1 of the 20 data sets for 1 participant) was considered an outlier. After examination of the case, this case was not eliminated because none of the individual values were outliers, and the case was assumed to be a legitimate member of the population from which the sample was drawn.

To assess normality, histograms for each indicator were examined. While most indicators had normal distributions, the social networks and depression indicators were skewed, such that many participants stated low numbers of people in their social network and low levels of depression. I also evaluated normality using skewness and kurtosis values. Skewness values ranged from -1.02 to 1.09, and kurtosis values ranged from -1.23 to 1.71. These values fall within reasonable limits, based on Kline (2005) suggested cut-off values of 3.0 and 10.0 for skewness and kurtosis, respectively (see Table 4 on page 65). However, because the histograms indicated some concerns regarding normality, I decided to use robust maximum likelihood estimation (MLR) in all structural equation modeling. I chose this method, rather than transforming the indicators, as this would have made the data harder to interpret (Yuan, Chan, & Bentler, 2000). MLR adjusts the model chi-square and associated fit statistics and the model

standard errors when questions exist regarding normality of continuous data (Muthén & Muthén, 2010).

The assumption of linearity is that there is a straight line relationship between two variables, and multicollinearity is a problem that occurs when variables are too highly correlated (.90 and above). To assess linearity and multicollinearity, I examined scatterplots and the correlation matrix for all indicators (Tabachnick & Fidell, 2007). As suggested by Tabachnick and Fidell (2007) when studies have numerous variables, I examined scatterplots for variables that were likely skewed (i.e., social network and depression indicators), and all scatterplots were oval-shaped, thus indicating relatively normal distributions and linear relationships. The correlation matrix revealed no significant problems with multicollinearity for any of the indicators, though CFA and SEM are robust for handling issues related to multicollinearity, redundancy, and high correlations (Tabachnick & Fidell, 2007).

I also examined residual scatterplots for the dependent variables to assess homoscedasticity (i.e., the assumption that the variability in scores for continuous variables is roughly the same at all values of other continuous variables). For all indicators, the scatterplots for the predicted values and standardized residuals were roughly the same width all over with some concentration around the middle points, thus indicating no problems with homoscedasticity (Mertler & Vannatta, 2005; Tabachnick & Fidell, 2007).

Confirmatory Factor Analysis (CFA)

CFA is a statistical technique used to assess measures and test relationships between measures and latent variables, and it is the first step to conducting SEM. Once an acceptable CFA model is identified, conducting SEM is more straightforward, as measurement properties have been verified (Brown, 2006; Little, in press). Practically speaking, the CFA model tests *all*

possible relationships among the latent variables and measures, whereas SEM tests specified regressions among latent variables and measures with the end goal of determining the most parsimonious model that fits the data.

During CFA analysis, the unique error term associated with each measure is separated from the factor loadings. CFA can be used for psychometric evaluation, and is used to estimate the scale reliability of test instruments that avoids problems of traditional methods, such as Cronbach's alpha. Cronbach's alpha is repeatedly used in the literature to indicate the level of internal consistency reliability for measures. However, Cronbach's alpha is known to underestimate scale reliability, and it "does not provide a dependable estimate of scale reliability for multiple-item measures" (Brown, 2006, p. 338).

When utilizing CFA, researchers must have a priori knowledge (e.g., past research, theory) about the indicators and latent variables and work to verify the number of latent variables and the patterns of relationships between indicators and latent variables (Brown, 2006). The value of the standardized factor loadings of each indicator on the latent variables is used to interpret latent variables in CFA; the standardized factor loadings are understood as the correlation between each indicator and the latent variable. Indicators with the highest standardized factor loadings, or correlation, with the factor explain the meaning of the latent variables.

To specify a CFA model, it is necessary to establish a scale for each latent variable in the model in order to identify parameter estimates for the remaining free parameters. This can be done by constraining the variance of each latent variable to 1.0 (i.e., fixed factor method), by fixing the value of 1.0 to one parameter associated with the latent variable directional influence (i.e., marker variable method), or by setting the indicator loadings to average 1.0 (i.e., effects

coding method) (Little, Slegers, & Card, 2006). The fixed factor method was chosen for this study because it was important to estimate all parameter estimates for each indicator.

Additionally, in this study, factors with two indicators were considered under-identified (whereby three indicators is *just-identified* and more than three indicators is *over-identified*), so I constrained the factor loadings to equality, rather than letting them be freely estimated because this located the construct at the true intersection of the two selected indicators (Little, Lindenberger, & Nesselroade, 1999). Because the various questions for the sub-scales and scales used in the study had different metrics (e.g., 0-5 Likert scales vs. 0-3 Likert scales), I standardized all variables by scaling them between 0 and 1 to ensure they were on a similar metric.

Fit Statistics

In order to determine if models are accurately fitting the data when using CFA and SEM analyses, statistical calculations, referred to as *fit indices*, are evaluated. Fit indices indicate the average or overall fit of the model. The literature suggests looking at multiple fit indices to make determinations, rather than relying on one statistic in making decisions because each of these fit indices have their inherent limitations. In this study, model fit was evaluated by examining the model chi-square (X^2), the normed chi-square (X^2/df), the root mean square of approximation (RMSEA), comparative fix index (CFI), the standardized root mean square residual (SRMR). The X^2, RMSEA, and SRMR values are considered absolute or "badness of fit" indices because the higher values, the worse the model fits the data. On the other hand, the CFI is considered a relative or "incremental index" whereby higher values indicate better fit (Kline, 2005).

The X^2 test, examination of the X^2 distribution table based on the degrees of freedom, indicates the amount of difference between expected and observed covariance matrices, and a

non-significant X^2 indicates the model has perfect fit in the population. However, X^2 by itself is often not helpful, particularly in complicated models with small sample and cluster sizes, because it is somewhat unrealistic to expect a model to be "perfect population fit." When sample sizes are not large, it can be helpful examine the normed chi-square, calculated by dividing the X^2 value by the degrees of freedom (*df*). The "rule of thumb" is that a ratio of less than 2.0 indicates a good-fitting model, though values of 3.0 or 5.0 can indicate reasonable fit (Kline, 2005).

The RMSEA is a parsimony-adjusted index based on the amount of error of approximation per degree of freedom, and "its formula includes a built-in correction for model complexity" (p. 137) that also takes sample size into account (Kline, 2005). RMSEA values less than or equal to .05 indicate close approximate fit, values between .05 and .08 indicate acceptable or reasonable error of approximation, and values over .10 suggest poor fit (Browne & Cudeck, 1993; Kline, 2005). The SRMR value is a measure of the mean absolute correlation residual "based on transforming both the sample covariance matrix and the predicted covariance matrix into correlation matrices" (p. 141). SRMR values less than .10 are considered acceptable model fit (Kline, 2005). The CFI assesses the relative improvement in fit of the tested model compared with a baseline model that assumes zero population covariances among the variables. CFI values greater than roughly .90 indicate acceptable model fit (Kline, 2005).

Steps for Fitting Multilevel Confirmatory Factor Analysis Model [5]

As discussed by Heck (2001), fitting multilevel data structures with SEM can require multiple steps to work through various issues. The first step is most often to test a conventional,

[5] Prior to testing the proposed models, I first ran CFA for a single latent construct of *Social Integration* using all variables as indicators. The model did not fit the data ($\chi 2 = 699.169$, $p = .000$; CFI = .533; RMSEA = .130; SRMR = .141). Because the model fit statistics indicated poor fit, I determined that *Social Integration* was not a single latent construct for these data and went ahead with the proposed CFA for the constructs and indicators.

single-level CFA model. This is also suggested by Yuan & Bentler (2007) for complex models and has been utilized in other studies. Though the single-level model is biased because it ignores the nested effects of the data, this gives indication of which variables can be used to serve as indicators of the latent constructs. This gives rough estimates of the model's adequacy and helps to identify obvious misspecifications. Model fit indices and parameter estimates were assessed to determine acceptable model fit.

Prior to conducting CFA, I examined the correlation matrix for all indicators. I did this because it is important that all indicators for a construct positively correlate more highly with each other than with indicators for another construct and that indicators for the construct correlate at least moderately (e.g., r = .20 or greater) with other indicators for the constructs (Floyd & Widaman, 1995). Upon examination of the correlation matrix, the PCS and MCS for the functional health and well-being construct (SF12v2 measure) were negatively correlated with each other (r = -.215), whereas these variables in the population have a high positive correlation.

I then examined the literature to further understand why the PCS and MCS variables might not be performing in this sample as they do in the population. I identified two articles that recommended scoring the SF12v2 scale differently for older adults. Resnick & Nahm (2001) and Cernin et al. (2010) state that question 6b should be included for the Physical Health component (in addition to questions 1, 2a, 2b, 3a, 3b, 5) and question 7 should be included on both the Physical Health and Mental Health component. Further, rather than using the scoring algorithms (Maruish & Kosinski, 2009), these variables should be summed to determine the scale score. I completed these steps, and the scale scores for physical health and mental health indicators were positively correlated (r = .515).

I then ran a series of CFA models. When models did not converge or did not achieve adequate fit, I utilized criteria, discussed by Brown (2006) for identifying unnecessary or problematic parameters, including the assessment of a) overall goodness of fit, b) the presence or absence of localized areas of strain in the solution, and c) the interpretability, size, and statistical significance of the model's parameter estimates (p. 113). Related to this, *Mplus* determines statistical significance of each parameter using a test statistic that is calculated by dividing the parameter estimate by its standard error; this statistical test determines if parameters are contributing to the constructs. In addition, ideally the standardized parameter estimates for each indicator are .70 or higher, and Floyd and Widaman (1995) recommend removing indicators if the standardized factor loadings are below .30. Lower values for the residual variances are ideal.

In working to fit the single-level CFA model, I made three adjustments to measures. First, as previously mentioned, the indicator for social groups (an indicator for Social Capital) was not significant (parameter estimate = .076, p = .427), so I included social groups as an observed variable in the model, rather than as an indicator of social capital (Brown, 2006). Second, the proximity-out indicator had low standardized parameter estimate at 0.376, and proximity-in and proximity-out did not highly correlate (r = .070). I re-examined the questions, and made the decision that proximity-in and proximity-out would better represent proximity if added together. In considering these variables, it makes sense that someone who has a lot of close network members living in the facility would not necessarily have a lot of close network members out of the facility, thus the reason the variables do not correlate. However, what matters in this study is that residents have either network members who live within an hour's drive of the nursing home or contacts who live in the nursing home, thus indicating people who live within close proximity to them.

Third, in examining the residual variances, collectively the values for depression construct indicators (range = .392 - .662) were higher than all other indicators, thus indicating higher measurement error. Because this construct had six indicators (over-identified), I utilized item parceling, a technique in which several items that measure the same construct are summed together to create parcels. As suggested by Floyd and Widaman (1995), "With large numbers of items, the use of item parcels should be pursued" (p. 294). Parcelling is advantageous because parcels may be more apt to approximate normality than individual items and are often considerably less complex when working to fit complex models (Brown, 2006). To decide which indicators to parcel together, I examined the standardized parameter estimates and correlations as well as considered the theoretical implications of putting two variables together. I utilized facet representative parceling, as described by Little, Cunningham, Shahar, and Widaman (2002) to create three parcels: a) dysphoric mood + withdrawal-apathy-vigor, b) worry/anxiety + memory/concentration, c) agitation + hopelessness.

After making these three modifications, the model achieved acceptable fit based on $\chi 2/df$, RMSEA, and SRMR values ($\chi 2 = 177.315$, $df = 117$, $p = .000$; $\chi 2/df = 1.51$; CFI = .932; RMSEA = .061; SRMR = .065). The standardized parameter estimates were all above 0.5, and all were all significant. There were no negative residual variances, and all R^2 values were significant. Indicators within each construct showed higher correlations with each other for the most part than with indicators for different constructs.

Finally, I added the covariates, activities of daily living, cognitive status, and socioeconomic status, to the within-level model. This model showed acceptable fit ($\chi^2 = 202.792$, $df = 148$, $p = .0019$; $\chi^2/df = 1.37$; CFI = .941; RMSEA = .051; SRMR = .061). Most covariates did not have significant relationships with constructs in the model. However, there

was an error message that one of the datasets did not terminate normally. After diagnosing the problem by testing models for each covariate on each latent construct one at a time, it was determined that the variable socioeconomic status had a potential linear dependency with the social support, social engagement, depression, and functional health and well-being constructs that was causing the error message. Therefore, I was not able to control for socioeconomic status on these selected constructs.

The second step in conducting ML-CFA is to examine the intraclass correlation coefficients (Muthén, 1994 as cited in Heck, 2001) in order to determine if the data should be examined at multiple levels. The intraclass correlation coefficient (ICC) is a statistical measure of the proportion of variance among groups and is "an explicit measure of the dependence of errors because it compares differences between groups to individual differences within groups" (Tabachnick & Fidell, 2007, p. 788). Higher values indicate that the independence of errors is violated and that grouping matters and should not be ignored in analyses. In comparison, ICCs should be zero if data are independent, which would indicate no similarities on key variables across groups. As a rule when ICCs are less than 0.05, there is little need to perform multilevel analyses. When the ICCs are considered high (range of .10 to .25), this suggests considerable similarities across groups (Heck, 2001), though this does depend on the number of cases per group. In this study, the ICCs ranged from 0.039-0.242 (see Table 11 below), with most indicating small effect sizes. This suggests a need to examine the data using multilevel analyses for some variables but that group level variance may be difficult to detect for certain variables. Because many of the indicators had ICCs lower than 0.10 (i.e., social groups, norms of reciprocity, trust, productive/civic, socializing, activity participation, mental health, dysmood/W-

A-V, and agitation/hopelessness), I anticipated that these variables would not have enough group-level variance for testing them on the between-level model.

Actually fitting multi-level models is often far more difficult that conceptualizing multi-level models, particularly when the sample size is small, the number of clusters is small, and the number of people within each cluster varies. In testing the model, I worked to establish whether the same individual-level CFA model (as discussed above) holds at the group-level, recognizing that the between-level model would more likely need to modified based on the ICC values previously identified (Heck, 2001). As a first step, I ran the ML-CFA model using the model determined through the single-level CFA and specifying it the same at both the within- and between-levels. The model did not converge.

Table 11. Intraclass Correlation Coefficients (ICCs)

Size	0.24
Frequency	0.16
Proximity	0.17
Social Groups	0.08
Norms of Reciprocity	0.09
Trust	0.08
Informational	0.11
Tangible	0.14
Emotional	0.11
Provided	0.12
Productive/Civic	0.05
Socializing	0.09
Activity Participation	0.08
Physical Health	0.13
Mental Health	0.05
DysMood/W-A-V	0.04
Worry/Memory	0.11
Agitation/Hopelessness	0.07

I then worked to fit ML-CFA models using each construct separately at the within- and between-levels. I used a "build up" approach, an incremental process in which one parameter is freed in the model at a time, versus a "tear down" approach, in which all parameters are freed and non-significant parameters are removed. Doing this helped to identify which constructs were not working at the between-level. The models for social networks and social support constructs converged and had good fit. However, the models for the social capital and social

engagement constructs did not converge, and all indicators had issues based on assessment of error messages and examination of parameter estimates. The models that included functional health and well-being and depression converged, but many of the indicators had issues. This did correspond with the ICCs for indicators that were less than 0.10. Therefore, at the between-level, I decided to only use social networks and social support as constructs on the between-level model.[6]

In addition, there was a warning message suggesting issues with the residual variances. In examining the variance and residual variance matrices, there were negative residual variances for indicators on the between-level. At the suggestion of Hox (2002) and Muthén and Asparouhov (2011), fixing residual variances to zero at the between-level is often necessary, particularly when Level 2 sample sizes are small and when the true between-group variance is close to zero and non-significant. Because these conditions were true for this study, I then decided to fix the residual variances for the Social Network and Social Support indicators at the between-level to zero.

Often, with CFA and SEM, statistical programs will provide a statistic called a modification index, which indicates which parameters, if freed, would improve the chi-square value. In these models, it is often correlated error terms (i.e., correlated residuals), which are correlations between residual variances of two indicators, that if freed, would improve model fit. Correlated error terms refer to situations in which knowing the residual of one indicator helps in knowing the residual associated with another indicator (Brown, 2006). For instance, in applied survey research, many people tend to give responses to questions that are socially acceptable,

[6] I tried leaving the physical health indicator and one of the depression indicators, as these indicators had ICCs above 0.10; however, the data did not converge on all to the datasets and various error messages appeared, so I took these indicators out of the model.

therefore, knowing that a respondent gave the socially acceptable response to one item increases the probability that a socially acceptable response will be given to another item. In short, correlated error terms are related to measurement error, and because this study utilized multiple measures for concepts that do have some conceptual overlap, it was understandably logical that freeing some of these parameters may help with model fit.

Mplus does not provide modification indices for imputed data or models with constraints. Therefore, in order to obtain modification indices, I ran the ML-CFA model on five of the imputed datasets separately (randomly chosen), removing the model constraints and asking for modification indices. In examining the modification indices for these five datasets, five correlated residuals with modification indices above 10.0 appeared on nearly every set. Theoretically, I decided that four of these relationships made sense: provided with norms of reciprocity; provided with productive/civic; activity participation with informational; worry/memory with cognitive status. I ran models, one at a time in which I freed the correlations between the indicators and used the chi-square difference test to assess if improvements were statistically meaningful. The model showed acceptable fit based on $\chi 2/df$, RMSEA, and SRMR ($\chi 2$ = 328.98, *df =175*; $\chi 2/df$ = 1.879; CFI = .884; RMSEA = .079; SRMR-W = .069; SRMR-B = .060).

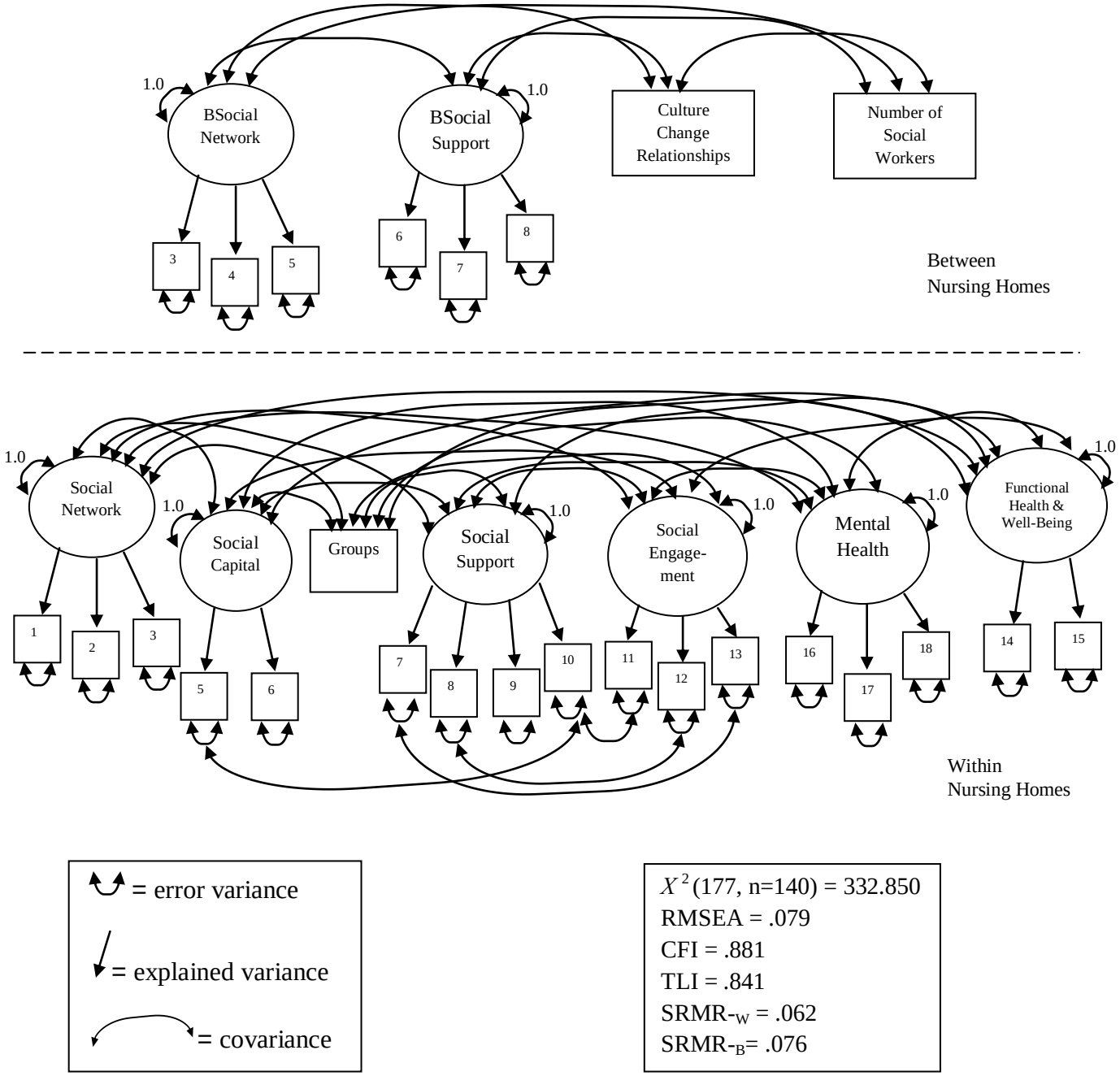
Next, I added the between-level only variables to the model for Culture Change (7 indicators) and Social Work (2 indicators). This model did not converge. I again used a "build up" approach versus a "tear down" approach. As such, I tested models utilizing one variable (i.e., sub-scale score) at a time for culture change and social work, examining fit statistics and parameter estimates to determine whether or not each indicator should be included in the final model. Using this method, the culture change sub-scale for *relationships* and the variable for the

total number of social workers working in the nursing home was included. In addition, I removed the tangible indicator from the social support construct, as the addition of the between-level only variables caused this indicator to have non-significant parameter estimates on social support.

The final ML-CFA model had overall acceptable fit based on $\chi 2/df$, RMSEA, and SRMR ($\chi 2 = 332.85$ *df =177*; $\chi 2/df = 1.881$; CFI = .881; RMSEA = .079; SRMR-W = .062; SRMR-B = .076). Considering the complexity of the model and its $\chi 2/df$, RMSEA, and SRMR scores, the final model appears to offer a reasonably close fit to the data. See Table 2 on page 61 for the relationships between indicators and their respective constructs. The amount of variance in each indicator that was accounted for by its latent construct ranged from 0.494 to 0.983. Some of these values are lower than the ideal standardized factor loadings of .70 or higher, but all values are higher the cut-off value of .30. Floyd and Widaman (1995) recommend removing indicators if the standardized factor loadings are below .30. In this study, I determined acceptable model fit for the measurement model using established statistical techniques discussed in the literature. See Appendix D, Figure 8 below for a pictorial representation of the final measurement model.

Appendix D: Additional Figures & Tables

Figure 8. Measurement Model for Multi-Level Confirmatory Factor Analysis[78]



[7] The model included the covariates (ADLs, cognitive status) for each construct; SES was included for social networks and social capital.

[8] Numbers in boxes correspond to the numbers in the variance/covariance matrices found below in Tables 12 and 13 below.

Table 12.

Variance/Covariance Matrix with Means and Standard Deviations for Within-Level Structural Model																					
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
1. Size	0.038																				
2. Frequency	0.020	0.021																			
3. Proximity	0.025	0.020	0.029																		
4. Groups	0.004	0.004	0.001	0.058																	
5. Reciprocity	0.005	0.001	0.003	0.004	0.075																
6. Trust	0.004	0.002	0.002	0.003	0.020	0.024															
7. Informational	0.007	0.006	0.005	0.004	-0.005	0.003	0.058														
8. Tangible	0.010	0.005	0.007	0.008	0.001	0.007	0.026	0.057													
9. Emotional	0.014	0.009	0.010	0.008	0.002	0.007	0.030	0.033	0.052												
10. Provided	0.007	0.004	0.006	0.003	-0.016	-0.001	0.023	0.020	0.030	0.043											
11. Productive/Civic	0.005	0.005	0.005	0.011	-0.003	0.001	0.007	0.005	0.011	0.016	0.044										
12. Socializing	0.015	0.013	0.014	0.010	0.011	0.001	0.001	0.007	0.008	0.004	0.011	0.039									
13. Activity	0.004	0.007	0.006	0.015	0.005	0.001	0.013	0.009	0.014	0.007	0.016	0.015	0.032								
14. Physical Health	0.000	0.002	0.001	0.004	0.007	0.007	-0.002	-0.001	-0.002	-0.002	0.006	0.007	0.008	0.240							
15. Mental Health	-0.001	0.000	-0.002	0.009	0.008	0.005	-0.004	-0.001	0.000	0.000	0.000	0.006	0.007	0.014	0.029						
16. Depression 1	0.009	0.007	0.006	0.016	0.016	0.010	0.003	0.009	0.016	0.013	0.013	0.016	0.015	0.014	0.022	0.058					
17. Depression 2	0.010	0.005	0.005	0.004	0.011	0.009	-0.001	0.005	0.008	0.004	-0.003	0.010	0.001	0.021	0.018	0.033	0.033				
18. Depression 3	0.012	0.011	0.011	0.015	0.012	0.014	0.000	0.002	0.009	0.013	0.007	0.018	0.013	0.004	0.024	0.051	0.051	0.074			
19. Cognitive	0.010	0.003	0.004	0.001	-0.005	0.002	0.004	0.004	0.003	0.007	0.001	0.003	-0.006	0.000	0.006	0.005	0.005	0.008	0.046		
20. ADL	0.001	-0.002	0.000	0.002	0.007	0.004	-0.002	0.004	0.004	0.008	0.009	0.004	0.002	0.011	0.009	0.025	0.025	0.021	-0.005	0.094	
21. SES	0.003	0.003	0.001	0.003	0.002	0.000	-0.001	-0.002	-0.003	-0.001	0.003	-0.001	0.002	-0.005	0.000	0.001	0.001	0.000	0.006	-0.002	0.021
Mean	0.340	0.183	0.247	0.261	0.728	0.624	0.418	0.534	0.531	0.370	0.297	0.603	0.467	0.596	0.770	0.671	0.758	0.682	0.735	0.528	0.613
SD	0.195	0.145	0.170	0.241	0.274	0.155	0.241	0.239	0.228	0.207	0.210	0.197	0.179	0.155	0.170	0.241	0.182	0.272	0.214	0.307	0.145

Table 13. Variance/Covariance Matrix with Means and Standard Deviations for Between-Level Structural Model

	1	2	3	4	5	6	7	8
1. Social Workers	0.062							
2. Relationships	0.007	0.023						
3. Size	0.003	0.006	0.003					
4. Frequency	0.001	0.004	0.002	0.001				
5. Proximity	0.006	0.006	0.002	0.001	0.003			
6. Informational	0.008	0.006	0.002	0.001	0.003	0.004		
7. Emotional	0.011	0.001	0.002	0.001	0.002	0.003	0.004	
8. Provided	0.008	0.002	0.001	0.000	0.001	0.002	0.003	0.002
Mean	0.240	1.056	0.340	0.183	0.247	0.418	0.531	0.370
SD	0.249	0.152	0.055	0.032	0.055	0.063	0.063	0.045

Table 14. Standardized Parameter Estimates for Covariates and Within-Level Constructs

Endogenous Variable Regressed on	*B*	*SE(B)*	*t*	*p* value
Networks on				
ADL	-0.028	0.119	-0.236	0.814
Cognitive	0.114	0.093	1.225	0.221
SES	0.057	0.102	0.561	0.575
Capital on				
ADL	0.110	0.100	1.105	0.269
Cognitive	0.043	0.106	0.411	0.681
SES	-0.031	0.096	-0.326	0.744
Support on				
ADL	0.070	0.075	0.934	0.350
Cognitive	0.043	0.098	0.445	0.656
Engagement on				
ADL	0.073	0.068	1.088	0.277
Cognitive	-0.183	0.098	-1.864	0.062
Depression on				
ADL	0.273	0.073	3.726	0.000
Cognitive	0.189	0.082	2.304	0.021
Functional Health on				
ADL	0.232	0.092	2.517	0.012
Cognitive	0.217	0.091	2.388	0.017